

FINAL DRAFT
HAZARD RANKING SYSTEM DOCUMENTATION
ONONDAGA LAKE
SYRACUSE, SALINA, GEDDES, CAMILLUS, NEW YORK
VOLUME 1 OF 5

WORK ASSIGNMENT NO. 019-2JZZ
PREPARED UNDER
CONTRACT NO. 68-W9-0051

FOR THE
ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

MARCH 20, 1992
UPDATED: APRIL 6, 1992

SUBMITTED BY:


STEVEN T. MCNULTY
PROJECT MANAGER


JOHN RIECKHOFF
PRE-REMEDIAL PROJECT MANAGER


DENNIS M. STAINKEN, PH.D.
WORK ASSIGNMENT MANAGER

SECTION I: SITE SUMMARY

SECTION I: SITE SUMMARY

SECTION II: HRS SCORESHEETS

1. Site Name: ONONDAGA LAKE
(as entered in CERCLIS)
2. Site CERCLIS Number: NYD 986913580
3. Site Reviewer: STEVEN T. MCNULTY
4. Date: APRIL 6, 1992
5. Site Location: SYRACUSE, SALINA, GEDDES, CAMILLUS/ONONDAGA, NEW YORK
(City/County,State)
6. Congressional District: 27 - ONONDAGA COUNTY, NEW YORK
7. Site Coordinates: Single

Latitude: 43 04'10.0"

Longitude: 076 12'29.0"

	Score
Ground Water Migration Pathway Score (Sgw)	0.00
Surface Water Migration Pathway Score (Ssw)	100.00
Soil Exposure Pathway Score (Ss)	0.00
Air Migration Pathway Score (Sa)	0.00
Site Score	50.00

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Willis Ave. Plant

a. Wastestream ID	East Flume
b. Hazardous Constituent Quantity (C) (lbs.)	44.50
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	44.50
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	8.90E-03

Wastestream Constituent
Hazardous Substances

Concent. Units Liquid Qualifier

Mercury

1.0E+02 % YES

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Willis Ave. Plant	
b. Source Type	Other	
c. Secondary Source Type	N.A.	
d. Source Volume (yd3) Source Area (ft2)	0.00	0.00
e. Source Volume/Area Value	0.00E+00	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	4.45E+01	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	8.90E-03	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	4.45E+01	

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Bridge Street Plant

a. Wastestream ID	West Flume
b. Hazardous Constituent Quantity (C) (lbs.)	215.40
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	215.40
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	4.31E-02

Wastestream Constituent Hazardous Substances	Concent.	Units	Liquid	Qualifier
Mercury	1.0E+02	%	YES	

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Bridge Street Plant	
b. Source Type	Other	
c. Secondary Source Type	N.A.	
d. Source Volume (yd3) Source Area (ft2)	0.00	0.00
e. Source Volume/Area Value	0.00E+00	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	2.15E+02	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	4.31E-02	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	2.15E+02	

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Semet Residue Ponds

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Semet Residue Ponds
b. Source Type	Surface Impoundment
c. Secondary Source Type	N.A.
d. Source Volume (yd3) Source Area (ft2)	363600.00 0.00
e. Source Volume/Area Value	1.45E+05
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	1.45E+05

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Anthracene	> 2	YES	1.0E+00	ppm
Benzene	> 2	YES	7.0E+04	ppm
Cresol, p-	> 2	YES	2.5E+02	ppm
Cumene	> 2	YES	7.0E+02	ppm
Fluorene	> 2	YES	2.5E+02	ppm
Naphthalene	> 2	YES	2.0E+04	ppm
Phenanthrene	> 2	YES	2.0E+02	ppm
Pyridine	> 2	YES	1.0E+03	ppm
Toluene	> 2	YES	2.0E+04	ppm
Xylene, m-	> 2	YES	1.0E+04	ppm

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Solvay Beds 9 & 10

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Solvay Beds 9 & 10
b. Source Type	Surface Impoundment
c. Secondary Source Type	N.A.
d. Source Volume (yd3) Source Area (ft2)	8300000.00 0.00
e. Source Volume/Area Value	3.32E+06
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	3.32E+06

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Arsenic	> 2	YES	1.6E+01	ppm
Cadmium	> 2	YES	2.0E+00	ppm
Chromium	> 2	YES	9.0E+00	ppm
Copper	> 2	YES	1.0E+01	ppm
Lead	> 2	YES	3.0E+01	ppm
Mercury	> 2	NO	4.0E-02	ppm
Nickel	> 2	YES	1.3E+01	ppm
Zinc	> 2	YES	3.0E+01	ppm

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Solvay Waste Bed 11

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Solvay Waste Bed 11
b. Source Type	Surface Impoundment
c. Secondary Source Type	N.A.
d. Source Volume (yd3) Source Area (ft2)	5960000.00 0.00
e. Source Volume/Area Value	2.38E+06
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	2.38E+06

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Arsenic	> 2	YES	1.6E+01	ppm
Cadmium	> 2	YES	2.0E+00	ppm
Chromium	> 2	YES	9.0E+00	ppm
Copper	> 2	YES	1.0E+01	ppm
Lead	> 2	YES	3.0E+01	ppm
Mercury	> 2	NO	4.0E-02	ppm
Nickel	> 2	YES	1.3E+01	ppm
Zinc	> 2	YES	3.0E+01	ppm

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Solvay Waste Bed 12

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Solvay Waste Bed 12
b. Source Type	Surface Impoundment
c. Secondary Source Type	N.A.
d. Source Volume (yd3) Source Area (ft2)	1933670.00 0.00
e. Source Volume/Area Value	7.73E+05 4,560,000
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	7.73E+05

Volume and
HWQ Correction
made by
Steven McNulty
on 4/08/93

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Arsenic	> 2	YES	1.6E+01	ppm
Asbestos	> 2	YES	0.0E+00	ppm
Cadmium	> 2	YES	2.0E+00	ppm
Chromium	> 2	YES	9.0E+00	ppm
Copper	> 2	YES	1.0E+01	ppm
Lead	> 2	YES	3.0E+01	ppm
Mercury	> 2	YES	4.0E-02	ppm
Nickel	> 2	YES	1.3E+01	ppm
Zinc	> 2	YES	3.0E+01	ppm

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Solvay Waste Bed 13

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Solvay Waste Bed 13
b. Source Type	Surface Impoundment
c. Secondary Source Type	N.A.
d. Source Volume (yd3) Source Area (ft2)	14500000.00 0.00
e. Source Volume/Area Value	5.80E+06
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	5.80E+06

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Arsenic	> 2	YES	1.6E+01	ppm
Asbestos	> 2	YES	0.0E+00	ppm
Cadmium	> 2	YES	2.0E+00	ppm
Chromium	> 2	YES	9.0E+00	ppm
Copper	> 2	YES	1.0E+01	ppm
Lead	> 2	YES	3.0E+01	ppm
Mercury	> 2	YES	4.0E-02	ppm
Nickel	> 2	YES	1.3E+01	ppm
Zinc	> 2	YES	3.0E+01	ppm

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Solvay Waste Bed 14

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Solvay Waste Bed 14
b. Source Type	Surface Impoundment
c. Secondary Source Type	N.A.
d. Source Volume (yd3) Source Area (ft2)	1733670.00 0.00 11,800,000
e. Source Volume/Area Value	6.93E+05 4,720,000
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	6.93E+05

Volume and
HWQ Correction
Made by
Steven McNut
on 4/08/93

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Arsenic	> 2	YES	1.6E+01	ppm
Asbestos	> 2	YES	0.0E+00	ppm
Cadmium	> 2	YES	2.0E+00	ppm
Chromium	> 2	YES	9.0E+00	ppm
Copper	> 2	YES	1.0E+01	ppm
Lead	> 2	YES	3.0E+01	ppm
Mercury	> 2	YES	4.0E-02	ppm
Nickel	> 2	YES	1.3E+01	ppm
Zinc	> 2	YES	3.0E+01	ppm

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Solvay Waste Bed 15

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Solvay Waste Bed 15
b. Source Type	Surface Impoundment
c. Secondary Source Type	N.A.
d. Source Volume (yd3) Source Area (ft2)	4490000.00 0.00
e. Source Volume/Area Value	1.80E+06
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00
g. Data Complete?	NO
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00
i. Data Complete?	NO
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	1.80E+06

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Arsenic	> 2	YES	1.6E+01	ppm
Asbestos	> 2	YES	0.0E+00	ppm
Cadmium	> 2	YES	2.0E+00	ppm
Chromium	> 2	YES	9.0E+00	ppm
Copper	> 2	YES	1.0E+01	ppm
Lead	> 2	YES	3.0E+01	ppm
Mercury	> 2	YES	4.0E-02	ppm
Nickel	> 2	YES	1.6E+01	ppm
Zinc	> 2	YES	3.0E+01	ppm

WASTE QUANTITY
ONONDAGA LAKE - 04/08/93

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No.	Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1	Willis Ave. Plant	SW	0.00E+00	4.45E+01	4.45E+01
2	Bridge Street Plant	SW	0.00E+00	2.15E+02	2.15E+02
3	Semet Residue Ponds	SW	1.45E+05	0.00E+00	1.45E+05
4	Solvay Beds 9 & 10	SW	3.32E+06	0.00E+00	3.32E+06
5	Solvay Waste Bed 11	SW	2.38E+06	0.00E+00	2.38E+06
6	Solvay Waste Bed 12	SW	4.56E+06 7.73E+05	0.00E+00	7.73E+05 4.56E+06
7	Solvay Waste Bed 13	SW	5.80E+06	0.00E+00	5.80E+06
8	Solvay Waste Bed 14	SW	4.72E+06 6.93E+05	0.00E+00	6.93E+05 4.72E+06
9	Solvay Waste Bed 15	SW	1.80E+06	0.00E+00	1.80E+06

Corrections to HWQ's
made by Steven McNulty
on 4/08/93

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values	HWQVs*	WCVs**
Ground Water	Toxicity/Mobility 1.00E+03	0	0
SW: Overland Flow, DW	Tox./Persistence 1.00E+04	1000000	100
SW: Overland Flow, HFC	Tox./Persis./Bioacc. 5.00E+08	1000000	1000
SW: Overland Flow, Env	Etox./Persis./Bioacc. 5.00E+08	1000000	1000
SW: GW to SW, DW	Tox./Persistence 0.00E+00	0	0
SW: GW to SW, HFC	Tox./Persis./Bioacc. 0.00E+00	0	0
SW: GW to SW, Env	Etox./Persis./Bioacc. 0.00E+00	0	0
Soil Exposure: Resident	Toxicity 0.00E+00	0	0
Soil Exposure: Nearby	Toxicity 0.00E+00	0	0
Air	Toxicity/Mobility 0.00E+00	0	0

* Hazardous Waste Quantity Factor Values

** Waste Characteristics Factor Category Values

Note: SW = Surface Water
GW = Ground Water
DW = Drinking Water Threat
HFC = Human Food Chain Threat
Env = Environmental Threat

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	550
2. Potential to Release by Overland Flow		
2a. Containment	10	10
2b. Runoff	25	0
2c. Distance to Surface Water	25	25
2d. Potential to Release by Overland Flow [lines 2a(2b+2c)]	500	250
3. Potential to Release by Flood		
3a. Containment (Flood)	10	10
3b. Flood Frequency	50	7
3c. Potential to Release by Flood (lines 3a x 3b)	500	70
4. Potential to Release (lines 2d+3c)	500	320
5. Likelihood of Release	550	550
Waste Characteristics		
6. Toxicity/Persistence	*	1.00E+04
7. Hazardous Waste Quantity	*	1000000
8. Waste Characteristics	100	100
Targets		
9. Nearest Intake	50	0.00E+00
10. Population		
10a. Level I Concentrations	**	0.00E+00
10b. Level II Concentrations	**	0.00E+00
10c. Potential Contamination	**	0.00E+00
10d. Population (lines 10a+10b+10c)	**	0.00E+00
11. Resources	5	0.00E+00
12. Targets (lines 9+10d+11)	**	0.00E+00
13. DRINKING WATER THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
 ** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	550
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	5.00E+08
16. Hazardous Waste Quantity	*	1000000
17. Waste Characteristics	1000	1000
Targets		
18. Food Chain Individual	50	4.50E+01
19. Population		
19a. Level I Concentrations	**	0.00E+00
19b. Level II Concentrations	**	3.00E-02
19c. Pot. Human Food Chain Contamination	**	3.60E-05
19d. Population (lines 19a+19b+19c)	**	3.00E-02
20. Targets (lines 18+19d)	**	4.50E+01
21. HUMAN FOOD CHAIN THREAT SCORE	100	100.00

* Maximum value applies to waste characteristics category.
 ** Maximum value not applicable.

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	550
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioacc.	*	5.00E+08
24. Hazardous Waste Quantity	*	1000000
25. Waste Characteristics	1000	1000
Targets		
26. Sensitive Environments		
26a. Level I Concentrations	**	0.00E+00
26b. Level II Concentrations	**	5.00E+00
26c. Potential Contamination	**	0.00E+00
26d. Sensitive Environments (lines 26a+26b+26c)	**	5.00E+00
27. Targets (line 26d)	**	5.00E+00
28. ENVIRONMENTAL THREAT SCORE	60	33.33
29. WATERSHED SCORE	100	100.00
30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof)	100	100.00

* Maximum value applies to waste characteristics category.

** Maximum value not applicable.

PREscore 1.0 - PRESCORE.TCL File 12/23/91
SURFACE WATER PATHWAY SEGMENT SUMMARY
ONONDAGA LAKE - 04/08/93

PAGE: 4

No.	Segment ID	Segment Type	Water Type	Start Point (mi)	End Point (mi)	Average Flow (cfs)
1	ONONDAGA LAKE	Lake	Fresh	0.00	0.01	515
2	ONONDAGA LAKE	Lake	Fresh	0.01	3.70	515
3	LAKE OUTLET	River	Fresh	3.70	4.20	515
4	SENECA RIVER	River	Fresh	4.20	10.95	3385
5	OSWEGO RIVER	River	Fresh	10.95	15.00	6643

OBSERVED RELEASE

No. Sample ID	Sample Type	Distance (miles)	Level of Contamination DW	HFC	Env
1 S - 46	Sediment	0.000	Level II	Level II	Level II

Sample Hazardous Substance No.	Concent.	Units
1 Mercury	1.9E+03	ppb

=====

Observed Release Factor 550

POTENTIAL TO RELEASE

Potential to Release by Overland Flow

Containment

No. Source ID		HWQ Value	Containment Value
1	Willis Ave. Plant	4.45E+01	10
2	Bridge Street Plant	2.15E+02	10
3	Semet Residue Ponds	1.45E+05	10
4	Solvay Beds 9 & 10	3.32E+06	10
5	Solvay Waste Bed 11	2.38E+06	10
6	Solvay Waste Bed 12	7.73E+05	10
7	Solvay Waste Bed 13	5.80E+06	10
8	Solvay Waste Bed 14	6.93E+05	10
9	Solvay Waste Bed 15	1.80E+06	10

=====
Containment Factor: 10

Distance to Surface Water

Distance to Surface Water: 0.0 feet
Distance to Surface Water Factor: 25

Runoff

A. Drainage Area: 0.0 acres
B. 2-year, 24-hour Rainfall: 0.0 inches
C. Soil Group: A
Coarse-textured soils with high infiltration rates
Runoff Factor: 0

=====

Potential to Release by Overland Flow Factor: 250

Potential to Release by Flood

No.	Source ID	HWQ Value	Flood Containment Value	Flood Frequency Value	Potential to Release by Flood
1	Willis Ave. Plant	4.45E+01	10	7	70
2	Bridge Street Plant	2.15E+02	10	7	70
3	Semet Residue Ponds	1.45E+05	10	7	70
4	Solvay Beds 9 & 10	3.32E+06	10	7	70
5	Solvay Waste Bed 11	2.38E+06	10	7	70
6	Solvay Waste Bed 12	7.73E+05	10	7	70
7	Solvay Waste Bed 13	5.80E+06	10	7	70
8	Solvay Waste Bed 14	6.93E+05	10	7	70
9	Solvay Waste Bed 15	1.80E+06	10	7	70

=====

Potential to Release by Flood Factor: 70

Source: 1 Willis Ave. Plant

Source Hazardous Waste Quantity Value: 44.50

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Mercury	10000	1.00E+00	1.00E+04

Source: 2 Bridge Street Plant

Source Hazardous Waste Quantity Value: 215.40

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Mercury	10000	1.00E+00	1.00E+04

Source: 3 Semet Residue Ponds

Source Hazardous Waste Quantity Value: 145440.00

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Anthracene	10	4.00E-01	4.00E+00
Benzene	100	4.00E-01	4.00E+01
Cresol, p-	10	1.00E+00	1.00E+01
Cumene	1000	4.00E-01	4.00E+02
Fluorene	100	1.00E+00	1.00E+02
Naphthalene	100 1000	4.00E-01	4.00E+02 01
Phenanthrene	1	4.00E-01	4.00E-01
Pyridine	1000	1.00E+00	1.00E+03
Toluene	10	4.00E-01	4.00E+00
Xylene, m-	1 10	4.00E-01	4.00E+00 -01

Corrections for updated
 SCDM's values made by
 Steven McNulty on
 4/08/93

Source: 4 Solvay Beds 9 & 10

Source Hazardous Waste Quantity Value: 3320000.00

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Arsenic	10000	1.00E+00	1.00E+04
Cadmium	10000	1.00E+00	1.00E+04
Chromium	10000	1.00E+00	1.00E+04
Copper	100	1.00E+00	1.00E+02
Lead	10000	1.00E+00	1.00E+04
Mercury	10000	1.00E+00	1.00E+04
Nickel	10000	1.00E+00	1.00E+04
Zinc	10	1.00E+00	1.00E+01

Source: 5 Solvay Waste Bed 11

Source Hazardous Waste Quantity Value: 2384000.00

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Arsenic	10000	1.00E+00	1.00E+04
Cadmium	10000	1.00E+00	1.00E+04
Chromium	10000	1.00E+00	1.00E+04
Copper	100	1.00E+00	1.00E+02
Lead	10000	1.00E+00	1.00E+04
Mercury	10000	1.00E+00	1.00E+04
Nickel	10000	1.00E+00	1.00E+04
Zinc	10	1.00E+00	1.00E+01

Source: 6 Solvay Waste Bed 12

Source Hazardous Waste Quantity Value: 773468.00

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
-----	-----	-----	-----
Arsenic	10000	1.00E+00	1.00E+04
Asbestos	10000	1.00E+00	1.00E+04
Cadmium	10000	1.00E+00	1.00E+04
Chromium	10000	1.00E+00	1.00E+04
Copper	100	1.00E+00	1.00E+02
Lead	10000	1.00E+00	1.00E+04
Mercury	10000	1.00E+00	1.00E+04
Nickel	10000	1.00E+00	1.00E+04
Zinc	10	1.00E+00	1.00E+01

Source: 7 Solvay Waste Bed 13

Source Hazardous Waste Quantity Value: 5800000.00

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Arsenic	10000	1.00E+00	1.00E+04
Asbestos	10000	1.00E+00	1.00E+04
Cadmium	10000	1.00E+00	1.00E+04
Chromium	10000	1.00E+00	1.00E+04
Copper	100	1.00E+00	1.00E+02
Lead	10000	1.00E+00	1.00E+04
Mercury	10000	1.00E+00	1.00E+04
Nickel	10000	1.00E+00	1.00E+04
Zinc	10	1.00E+00	1.00E+01

Source: 8 Solvay Waste Bed 14

Source Hazardous Waste Quantity Value: 693468.00

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Arsenic	10000	1.00E+00	1.00E+04
Asbestos	10000	1.00E+00	1.00E+04
Cadmium	10000	1.00E+00	1.00E+04
Chromium	10000	1.00E+00	1.00E+04
Copper	100	1.00E+00	1.00E+02
Lead	10000	1.00E+00	1.00E+04
Mercury	10000	1.00E+00	1.00E+04
Nickel	10000	1.00E+00	1.00E+04
Zinc	10	1.00E+00	1.00E+01

Source: 9 Solvay Waste Bed 15

Source Hazardous Waste Quantity Value: 1796000.00

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Arsenic	10000	1.00E+00	1.00E+04
Asbestos	10000	1.00E+00	1.00E+04
Cadmium	10000	1.00E+00	1.00E+04
Chromium	10000	1.00E+00	1.00E+04
Copper	100	1.00E+00	1.00E+02
Lead	10000	1.00E+00	1.00E+04
Mercury	10000	1.00E+00	1.00E+04
Nickel	10000	1.00E+00	1.00E+04
Zinc	10	1.00E+00	1.00E+01

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
1	Mercury	10000	1.00E+00	1.00E+04

Toxicity/Persistence Value from Source Hazardous Substances:	1.00E+04
Toxicity/Persistence Value from Observed Release Hazardous Substances:	1.00E+04
Toxicity/Persistence Factor:	1.00E+04
Sum of Source Hazardous Waste Quantity Values:	1.49E+07
Hazardous Waste Quantity Factor:	1000000
Waste Characteristics Factor Category:	100

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

Sample ID: S - 46
Sample Medium: Sediment
Location: 0.00 miles

Hazardous Substance	Hazardous Substance Concentration	DW MCL Benchmark Concentration	Units
Mercury	1.9E+03	N.A.	ppb

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

Sample ID: S - 46
Distance from the Probable Point of Entry: 0.00 miles

Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population

- N/A and/or data not specified		

=====

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
--------	--	------------

- N/A and/or data not specified
=====

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served

- N/A and/or data not specified		

Type of Surface Water Body	Total Population	Dilution-Weighted Population

- N/A and/or data not specified		

=====

Dilution-Weighted Population Served by Potentially Contaminated Intakes:	0.0
Potential Contamination Factor:	0.0

Nearest Intake

Location of Nearest Drinking Water Intake: N.A.

Nearest Intake Factor: 0.00

Resources

Resource Use: NO

Resource Value: 0.00E+00

Source: 1 Willis Ave. Plant

Source Hazardous Waste Quantity Value: 44.50

Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Mercury	10000	1.00E+00	5.00E+04	5.00E+08

Source: 2 Bridge Street Plant

Source Hazardous Waste Quantity Value: 215.40

Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Mercury	10000	1.00E+00	5.00E+04	5.00E+08

Source: 3 Semet Residue Ponds

Source Hazardous Waste Quantity Value: 145440.00

Hazardous Substance	Toxicity Value	Persistence Value	Bio-accum. Value	Toxicity/Persistence/Bioaccum. Value
Anthracene	10	4.00E-01	5.00E+03	2.00E+04
Benzene	100	4.00E-01	5.00E+03	2.00E+05
Cresol, p-	10	4.00E-01	5.00E+02	2.00E+03
Cumene	1000 0.4	1.00E+00	5.00E+02	5.00E+05 2.00E+05
Fluorene	100	1.00E+00	5.00E+03	5.00E+05
Naphthalene	100	4.00E-01	5.00E+02	2.00E+05 2.00E+04
Phenanthrene	1	4.00E-01	5.00E+01	2.00E+01
Pyridine	1000	1.00E+00	5.00E-01	5.00E+02
Toluene	10	4.00E-01	5.00E+01	2.00E+02
Xylene, m-	1	1.00E+00	5.00E+02	5.00E+03 5.00E+02

Corrections for updated
 SCOM's values made by
 Steven McNulty on
 4/08/93

Source: 4 Solvay Beds 9 & 10

Source Hazardous Waste Quantity Value: 3320000.00

Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Arsenic	10000	1.00E+00	5.00E+00	5.00E+04
Cadmium	10000	1.00E+00	5.00E+03	5.00E+07
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	10000	1.00E+00	5.00E+01	5.00E+05
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10000	1.00E+00	5.00E-01	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 5 Solvay Waste Bed 11

Source Hazardous Waste Quantity Value: 2384000.00

Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Arsenic	10000	1.00E+00	5.00E+00	5.00E+04
Cadmium	10000	1.00E+00	5.00E+03	5.00E+07
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	10000	1.00E+00	5.00E+01	5.00E+05
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10000	1.00E+00	5.00E-01	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 6 Solvay Waste Bed 12

Source Hazardous Waste Quantity Value: 773468.00

Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Arsenic	10000	1.00E+00	5.00E+00	5.00E+04
Asbestos	10000	1.00E+00	5.00E-01	5.00E+03
Cadmium	10000	1.00E+00	5.00E+03	5.00E+07
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	10000	1.00E+00	5.00E+01	5.00E+05
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10000	1.00E+00	5.00E-01	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 7 Solvay Waste Bed 13

Source Hazardous Waste Quantity Value: 5800000.00

Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Arsenic	10000	1.00E+00	5.00E+00	5.00E+04
Asbestos	10000	1.00E+00	5.00E-01	5.00E+03
Cadmium	10000	1.00E+00	5.00E+03	5.00E+07
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	10000	1.00E+00	5.00E+01	5.00E+05
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10000	1.00E+00	5.00E-01	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 8 Solvay Waste Bed 14

Source Hazardous Waste Quantity Value: 693468.00

Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Arsenic	10000	1.00E+00	5.00E+00	5.00E+04
Asbestos	10000	1.00E+00	5.00E-01	5.00E+03
Cadmium	10000	1.00E+00	5.00E+03	5.00E+07
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	10000	1.00E+00	5.00E+01	5.00E+05
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10000	1.00E+00	5.00E-01	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 9 Solvay Waste Bed 15

Source Hazardous Waste Quantity Value: 1796000.00

Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Arsenic	10000	1.00E+00	5.00E+00	5.00E+04
Asbestos	10000	1.00E+00	5.00E-01	5.00E+03
Cadmium	10000	1.00E+00	5.00E+03	5.00E+07
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	10000	1.00E+00	5.00E+01	5.00E+05
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10000	1.00E+00	5.00E-01	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
1	Mercury	10000	1.00E+00	5.00E+04	5.00E+08

Toxicity/Persistence/Bioaccumulation Value from Source Hazardous Substances:	5.00E+08
Toxicity/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	5.00E+08
Toxicity/Persistence/Bioaccumulation Factor:	5.00E+08
Sum of Source Hazardous Waste Quantity Values:	1.49E+07
Hazardous Waste Quantity Factor:	1000000
Waste Characteristics Factor Category:	1000

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

Sample ID: S - 46
Sample Medium: Sediment
Location: 0.00 miles

Hazardous Substance	Hazardous Substance Concentration	FDAAL Benchmark Concentration	Units
Mercury	1.9E+03	N.A.	ppb

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

Sample ID: S - 46
Distance from the Probable Point of Entry: 0.00 miles

Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
---------	-------------------------------	--------------------------------------

- N/A and/or data not specified

=====

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
1 ONONDAGA LAKE	0.1	3.00E-02

Sum of Human Food Chain Population Values: 3.00E-02

Level II Concentrations Factor: 3.00E-02

Potential Contamination

Fishery	Annual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di
2 ONONDAGA LAKE	0.1	Lake	515	0.0	1.00E-02	3.00E-04
4 SENECA RIVER	0.1	River	3385	0.0	1.00E-03	3.00E-05
5 OSWEGO RIVER	0.1	River	6643	0.0	1.00E-03	3.00E-05

Sum of (Pi*Di): 3.60E-04

Potential Human Food Chain Contamination Factor: 3.60E-05

Food Chain Individual

Location of Nearest Fishery: ONONDAGA LAKE
 Distance from the Probable Point of Entry: 0.00 miles
 Type of Surface Water Body: Lake
 Dilution Weight: 0.0100000
 Level of Contamination: Level II

Food Chain Individual Factor: 45.00

Source: 1 Willis Ave. Plant

Source Hazardous Waste Quantity Value: 44.50

Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Mercury	10000	1.00E+00	5.00E+04	5.00E+08

Source: 2 Bridge Street Plant

Source Hazardous Waste Quantity Value: 215.40

Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Mercury	10000	1.00E+00	5.00E+04	5.00E+08

Source: 3 Semet Residue Ponds

Source Hazardous Waste Quantity Value: 145440.00

Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Anthracene	10000	4.00E-01	5.00E+03	2.00E+07
Benzene	10000	4.00E-01	5.00E+02	2.00E+06
Cresol, p-	100	1.00E+00	5.00E+03	5.00E+05
Cumene	100	4.00E-01	5.00E+02	2.00E+04
Fluorene	1000	1.00E+00	5.00E+03	5.00E+06
Naphthalene	1000	4.00E-01	5.00E+02	2.00E+05
Phenanthrene	1000	4.00E-01	5.00E+03	2.00E+06
Pyridine	100	1.00E+00	5.00E-01	5.00E+01
Toluene	100	4.00E-01	5.00E+01	2.00E+03
Xylene, m-	100	4.00E-01	5.00E+02	2.00E+04

Source: 4 Solvay Beds 9 & 10

Source Hazardous Waste Quantity Value: 3320000.00

Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Arsenic	10	1.00E+00	5.00E+01	5.00E+02
Cadmium	1000	1.00E+00	5.00E+03	5.00E+06
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	1000	1.00E+00	5.00E+03	5.00E+06
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10	1.00E+00	5.00E+02	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 5 Solvay Waste Bed 11

Source Hazardous Waste Quantity Value: 2384000.00

Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Arsenic	10	1.00E+00	5.00E+01	5.00E+02
Cadmium	1000	1.00E+00	5.00E+03	5.00E+06
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	1000	1.00E+00	5.00E+03	5.00E+06
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10	1.00E+00	5.00E+02	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 6 Solvay Waste Bed 12

Source Hazardous Waste Quantity Value: 773468.00

Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Arsenic	10	1.00E+00	5.00E+01	5.00E+02
Asbestos	0	1.00E+00	5.00E-01	0.00E+00
Cadmium	1000	1.00E+00	5.00E+03	5.00E+06
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	1000	1.00E+00	5.00E+03	5.00E+06
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10	1.00E+00	5.00E+02	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 7 Solvay Waste Bed 13

Source Hazardous Waste Quantity Value: 5800000.00

Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Arsenic	10	1.00E+00	5.00E+01	5.00E+02
Asbestos	0	1.00E+00	5.00E-01	0.00E+00
Cadmium	1000	1.00E+00	5.00E+03	5.00E+06
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	1000	1.00E+00	5.00E+03	5.00E+06
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10	1.00E+00	5.00E+02	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 8 Solvay Waste Bed 14

Source Hazardous Waste Quantity Value: 693468.00

Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Arsenic	10	1.00E+00	5.00E+01	5.00E+02
Asbestos	0	1.00E+00	5.00E-01	0.00E+00
Cadmium	1000	1.00E+00	5.00E+03	5.00E+06
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	1000	1.00E+00	5.00E+03	5.00E+06
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10	1.00E+00	5.00E+02	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Source: 9 Solvay Waste Bed 15

Source Hazardous Waste Quantity Value: 1796000.00

Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Arsenic	10	1.00E+00	5.00E+01	5.00E+02
Asbestos	0	1.00E+00	5.00E-01	0.00E+00
Cadmium	1000	1.00E+00	5.00E+03	5.00E+06
Chromium	10000	1.00E+00	5.00E+00	5.00E+04
Copper	100	1.00E+00	5.00E+04	5.00E+06
Lead	1000	1.00E+00	5.00E+03	5.00E+06
Mercury	10000	1.00E+00	5.00E+04	5.00E+08
Nickel	10	1.00E+00	5.00E+02	5.00E+03
Zinc	10	1.00E+00	5.00E+02	5.00E+03

Hazardous Substances Found in an Observed Release

Sample No.	Observed Release Hazardous Substance	Eco-toxicity Value	Persistence Value	Bio-accum. Value	Ecotoxicity/Persistence/Bioaccum. Value
1	Mercury	10000	1.00E+00	5.00E+04	5.00E+08

Ecotoxicity/Persistence/Bioaccumulation Value from Source Hazardous Substances:	5.00E+08
Ecotoxicity/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	5.00E+08
Ecotoxicity/Persistence/Bioaccumulation Factor:	5.00E+08
Sum of Source Hazardous Waste Quantity Values:	1.49E+07
Hazardous Waste Quantity Factor:	1000000
Waste Characteristics Factor Category:	1000

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

Sample ID: S - 46
Sample Medium: Sediment
Location: 0.00 miles

Hazardous Substance	Hazardous Substance Concentration	AWQC Benchmarks Concentrations FRESH SALT	Units
Mercury	1.9E+03	N.A.	ppb

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

Sample ID: S - 46
Distance from the Probable Point of Entry: 0.00 miles

Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
-----------------------	---	-----------------------------------

- N/A and/or data not specified

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
---------	--	------------------------------

- N/A and/or data not specified

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
1 ONONDAGA LAKE	0.00	5
Sum of Sensitive Environments Values:		5

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
- N/A and/or data not specified		
Total Wetlands Frontage:	0.00 Miles	Total Wetlands Value: 0

Sum of Sensitive Environments Value + Wetlands Value: 5.00E+00

Level II Concentrations Factor: 5.00E+00

Potential Contamination

Sensitive Environments

Type of Surface		Sensitive Environment
Water Body	Sensitive Environment	Value

Wetlands

Type of Surface		Wetlands	Wetlands
Water Body	Sensitive Environment	Frontage	Value

- N/A and/or data not specified

Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)
-------------------------------	---	---	----------------------------	-----------

- N/A and/or data not specified

Sum of Dj(Wj+Sj):	0.00E+00
Sum of Dj(Wj+Sj)/10:	0.00E+00

=====

Potential Contamination Sensitive Environment Factor:	0.00E+00
---	----------

=====

SECTION III: DOCUMENTATION RECORD

HAZARD RANKING SYSTEM (HRS) DOCUMENTATION RECORD—REVIEW COVER SHEET

Name of Site: Onondaga Lake

Contact Persons

U.S. Environmental

Protection Agency: Ben Conetta - Region II - New York, NY
Sandra Foose - Region II - Edison, NJ

(212)-264-6696
(908)-906-6808

Site Investigation(s): New York State Department of Environmental Conservation (NYSDEC)
Central Office - Albany, NY (518) 457-9538
Regional Office - Syracuse, NY (315) 426-7531

Documentation Record: Steven T. McNulty (609)-860-0100

Pathways, Components, or Threats Not Evaluated

Based on background information and preliminary scoring, it was determined that an evaluation of the groundwater, groundwater to surface water, soil exposure and air pathways would not be documented. The basis for excluding these specific pathways from the final HRS score and documentation record, is that their corresponding pathway scores would not contribute significantly to the overall site score.

The groundwater pathway was excluded from the HRS evaluation due to the lack of potentially affected targets. An observed release to the overburden aquifer underlying the site, of organic and inorganic constituents, is documentable for and attributable to several site hazardous waste sources (Ref. Nos. 30; 32; 33; 36; 38; 39). However, there is a minimal number of people which utilize groundwater as a source for potable water within a 4 mile distance of the site (Ref. No. 14). The only identified target point is that the site's sources lie above a New York State designated wellhead protection area (Ref. Nos. 19; 20). Therefore, the groundwater pathway component score for the site is minimal, primarily due to a low potentially affected population (Ref. Nos. 1; 14).

The groundwater to surface water migration component of the surface water pathway will not be documented. The primary mechanism by which the hazardous contaminant (i.e. mercury) of concern migrated into Onondaga Lake, was via overland flow of aqueous wastestream discharges (Ref. Nos. 3, pp. 7-15, 57-58; 4, pp. 1-3)). As an observed release to surface water via overland flow/flood migration results in the maximum attainable surface water migration pathway score, the evaluation of the groundwater to surface water migration component would not increase the overall HRS site score.

The soil exposure pathway was not evaluated, as the nearest population is too distant and too few in number to support a significant potentially contaminated population (Ref. No. 15). Furthermore, there are no workers, schools, daycare centers, or terrestrial sensitive environments within 200 feet of site waste source locations or observed areas of contaminated soil (Ref. Nos. 11; 28; 31). This information results in a minimal component score for the soil exposure pathway.

The air migration pathway was not documented, due to the absence of a verifiable air release (Ref. Nos. 34; 35) and the lack of sufficient potential to release and target factor category values. Specifically, the impact potential of the site's hazardous waste sources, coupled with a low nearby population (Ref. No. 15) and a lack of potentially affected sensitive environments (Ref. Nos. 12; 31), would not contribute significantly to the overall HRS site score.

HRS DOCUMENTATION RECORD

Name of Site: Onondaga Lake

EPA Region: 2

Date Prepared: March 20, 1992

Updated: April 6, 1992

City, County and State: City of Syracuse, Towns of Camillus, Geddes, and Salina, Onondaga County,
New York

General Location in the State: Onondaga Lake, located to the west of Syracuse, New York

Topographic Map: Syracuse West, New York

Latitude: 43° 04' 10" N

Longitude: 76° 12' 29" W

EPA ID No.: NYD 986913580

(Ref. Nos. 11; 22)

Scores

Air Pathway	Not Evaluated
Ground Water Pathway	Not Evaluated
Soil Exposure Pathway	Not Evaluated
Surface Water Pathway	100.00

HRS SITE SCORE

50.00

WORKSHEET FOR COMPUTING HRS SITE SCORE

	<u>S</u>	<u>S²</u>
1. Ground Water Migration Pathway Score (S _{gw}) (from Table 3-1, line 13)	NE	NE
2a. Surface Water Overland/Flood Migration Component (from Table 4-1, line 30)	100.00	10,000.00
2b. Ground Water to Surface Water Migration Component (from Table 4-25, line 28)	NE	NE
2c. Surface Water Migration Pathway Score (S _{sw}) Enter the larger of lines 2a and 2b as the pathway score.	100.00	10,000.00
3. Soil Exposure Pathway Score (S _s) (from Table 5-1, line 22)	NE	NE
4. Air Migration Pathway Score (S _a) (from Table 6-1, line 12)	NE	NE
5. Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		10,000.00
6. HRS Site Score Divide the value on line 5 by 4 and take the square root	50.00	

NE - Not Evaluated

REFERENCES

- | <u>Reference Number</u> | <u>Description of the Reference</u> |
|-------------------------|--|
| 1. | Hazard Ranking System; Final Rule, 40 Code of Federal Regulations Part 300. Federal Register, Volume 55, No. 241, pp. 51532 through 51667. December 14, 1990 [1 page]. |
| 2. | Superfund Chemical Data Matrix, March 1993 [1 page]. |
| 3. | National Field Investigations Center, Cincinnati, Ohio and Region II, New York. Report of Mercury Source Investigation - Onondaga Lake, New York and Allied Chemical Corporation, Solvay, New York. U.S. Environmental Protection Agency, Office of Enforcement and General Counsel. April 1973 [86 pages]. |
| 4. | Letter from J. L. Rourke, Manager - Technical, Allied Chemical Corporation, to William A. Hicks, P.E., Regional Director of Public Health Engineering, State of New York, Department of Health. July 21, 1970 [10 pages]. |
| 5. | Environmental Impact Statement on Wastewater Treatment Facilities Construction Grants for the Onondaga Lake Drainage Basin. U.S. Environmental Protection Agency, Region II, 26 Federal Plaza, New York City, New York. May 1974 [8 pages, nonconsecutive]. |
| 6. | Letter (with attachments) from C. J. Porter, Plant Manager, Allied Chemical Corporation, to George K. Hansen, P.E., Chief, P.D.E.S. Permit Section, New York State Department of Environmental Conservation (NYSDEC). July 31, 1979 [23 pages]. |
| 7. | Effler, Steven W. The Impact of a Chlor-alkali Plant on Onondaga Lake and Adjoining Systems. Water, Air, and Soil Pollution 33 (1987) 85-115 [16 pages]. |
| 8. | Telecon Notes: Conversations between Lee Flocke, Regional Water Engineer, NYSDEC, and Joann Wagner, NUS Corporation, April 30, May 3, and May 23, 1991 [6 pages]. |
| 9. | Johnson, David G., P.E. Engineering Investigations at Inactive Hazardous Waste Sites in the State of New York, Phase II Investigations. Onondaga Lake, NYS Number 734030, Onondaga County, New York. Prepared for Division of Hazardous Waste Remediation, NYSDEC, 50 Wolf Road, Albany, New York. Vol. 1; Vol. 2, pp. 2, 3, 38-39, 90-92, 112, 124-131 and Field Logbooks. August 1989 [265 pages, nonconsecutive]. |
| 10. | Hydrogeologic Assessment of the Allied Waste Beds in the Syracuse Area, Allied-Signal, Inc. Solvay, New York. Blasland & Bouck Engineers, P.C./Blasland, Bouck & Lee Engineers and Geoscientists. Vol. 1, pp. 1-1 through 1-8; 2-1 through 2-7; 3-1 through 3-18; 4-1 through 4-59; Tables 1,2,3,4,15; Figures 1,6,8,9,10,11. April 1989 [116 pages, nonconsecutive]. |

REFERENCES (continued)

<u>Reference Number</u>	<u>Description of the Reference</u>
11.	Fifteen Mile Surface Water Pathway Map for Onondaga Lake compiled from U.S. Geological Survey Topographic Maps, 7.5 minute series, "Syracuse West Quadrangle, 1978", "Camillus Quadrangle, 1978", "Baldwinsville Quadrangle, 1978", and "Brewerton, 1978".
12.	Fifteen Mile Surface Water Pathway Map for Onondaga Lake compiled from National Wetlands Inventory Maps, 7.5 Minute Series "Syracuse West Quadrangle, 1978", "Camillus Quadrangle, 1978", "Baldwinsville Quadrangle, 1978", and "Brewerton Quadrangle, 1978".
13.	Telecon Note: Conversation between Mattur Bala Krishna, NYSDEC Water Quality Unit, Albany, New York, and Steven T. McNulty, Malcolm Pirnie, Incorporated (MPI). June 23, 1992 [1 page].
14.	Telecon Notes (and map): Conversations between Robert Burdick, Onondaga County Health Department, and Joann Wagner, NUS Corporation, April 1 & May 2, 1991, and Steven T. McNulty, MPI, March 2, 1992 [6 pages].
15.	Project Note: to file from Steven T. McNulty, MPI. Subject: Population within a Four Mile distance of Onondaga Lake. September 14, 1992 [8 pages].
16.	NYSDEC-Division of Hazardous Waste Remediation. Inactive Hazardous Waste Disposal Sites in New York State - Onondaga County. Prepared by the New York State Departments of Environmental Conservation and Health. April 1990 [10 pages, nonconsecutive].
17.	Water Resources Data, New York, Water Year 1988, Volume 3, Western New York. U.S. Geological Survey Water-Data Report NY-88-3. [7 pages, nonconsecutive].
18.	Telecon Note: Conversation between Paul Moore, NYSDEC-Bureau of Fisheries, Cortland, New York, and Steven T. McNulty, MPI. July 10, 1992 [1 page].
19.	Water Resources Investigations Report 87-4122, Finger Lakes Sheet. U.S. Department of the Interior, Geological Survey. Unconsolidated Aquifers in Upstate New York-Finger Lakes Sheet by Todd S. Miller. 1987 [6 pages].
20.	New York State Wellhead Protection Program, prepared by NYSDEC, Division of Water, for Submittal to U.S. EPA. Chapter 3, pp. 15 through 25. September 1990 [17 pages, nonconsecutive].

REFERENCES (continued)

<u>Reference Number</u>	<u>Description of the Reference</u>
21.	Summary notes of Onondaga Lake Subcommittee Meeting tours of Crucible Specialty Metals, Allied Corporation, and LCP. Prepared by Robert E. Deyle, Executive Secretary, Environmental Management Council, Onondaga County Legislature. January 11, 1983 [8 pages].
22.	CERCLIS, U.S. EPA Superfund Program, List-8; Site/Event Listing, p. 193. February 28, 1991 [1 page].
23.	Letter from Hollis S. Ingraham, M.D., Commissioner of Health, State of New York - Department of Health, to R. Stewart Kilborne, Commissioner, New York State Department of Environmental Conservation. May 15, 1970 [1 page]. ORDER Prohibiting Fishing in Onondaga Lake. Prepared by R. Stewart Kilborne, Conservation Commissioner, State of New York Conservation Department. May 15, 1970 [1 page].
24.	Project Note: to file from Steven T. McNulty, MPI. Subject: Average Annual Flow Calculations for Onondaga Lake. August 31, 1992 [1 page].
25.	Project Note: to file from Steven T. McNulty, MPI. Subject: Review/Summation of mercury discharge graph, Ref. No. 4, p. 5 (East Flume). June 17, 1992 [1 page].
26.	Project Note: to file from Steven T. McNulty, MPI. Subject: Review/Summation of mercury discharge graph, Ref. No. 4, p. 8 (West Flume). June 17, 1992 [1 page].
27.	Project Note: to file from Steven T. McNulty, MPI. Subject: Surface water intakes located along surface water pathway, for Onondaga Lake. March 3, 1992 [4 pages].
28.	Telecon Note: Conversation between Al Labuz, Allied-Signal, Inc. and Steven T. McNulty, MPI. Subject: General Information. March 17, 1992 [1 page].
29.	Letter from A.J. Labuz, Superintendent-Environmental Control, Allied Corporation, to Norman F. Boyce, P.E., Regional Air Pollution Control Engineer, NYSDEC. May 15, 1989 [2 pages].
30.	Groundwater Quality Conditions at the Former Willis Avenue Plant, Allied Chemical Corporation, Solvay, New York. Prepared by Geraghty & Miller, Inc., for Allied Chemical Corporation. April 1982 [58 pages].
31.	Project Note: to file from Steven T. McNulty, MPI. Subject: Sensitive environments for Onondaga Lake. March 6, 1992 [3 pages].
32.	History of the Semet Residue Ponds, Geddes, New York, Allied Signal, Inc., Solvay, New York. Prepared by O'Brien & Gere, Inc. for Allied-Signal, Incorporated. September 1989 [75 pages].

REFERENCES (continued)

<u>Reference Number</u>	<u>Description of the Reference</u>
33.	Project Note: to file from Steven T. McNulty. Subject: Section 8 - Conclusions and Remedial Objectives, adapted from a Remedial Investigation of the Semet Residue Ponds, performed by O'Brien & Gere, Inc. for Allied-Signal, Incorporated. October 29, 1991 [28 pages, nonconsecutive].
34.	Onondaga Lake, Natural Resource Damages Preassessment Screen, AIR. Prepared by the NYSDEC. 1991 [6 pages].
35.	Memorandum to James R. Miller, M.D., M.P.H., from William R. Sawyer, Ph.D, Onondaga County Health Department. Subject: Air Monitoring at the Site of the Proposed Onondaga Lake Bike Trail/Solvay. August 21, 1991 [11 pages].
36.	Hydrogeologic Investigation at Allied Chemical Corporation, Syracuse Works, Solvay, New York. Prepared by Geraghty & Miller, Inc., for Allied Chemical Corporation. January 1980 [50 pages].
37.	New York State Department of Environmental Conservation, Onondaga Lake Sediment Sampling Episode and Chemical Analysis Results. October 25, 1991 [30 pages].
38.	History of the Willis Avenue Plant, Petroleum Storage Facility and Associated "Hot-Spots". Prepared by O'Brien & Gere Engineers, Inc. for Allied-Signal, Inc. Solvay, New York. November 1990 [93 pages].
39.	Remedial Investigation of the R-5P and MW-111 Areas. Prepared by Blasland & Bouck Engineers, P.C. for Allied-Signal Incorporated, Solvay, New York. May 1989. [89 pages.]
40.	Telecon Note: Conversation between Les Wedge, NYSDEC, and Steven T. McNulty, MPI. August 28, 1992 [1 page].
41.	Sloan, Ronald. Ph.D. Trends in Mercury Contamination of the Fish in Onondaga Lake. Prepared for the Onondaga Lake Remediation Conference by the NYSDEC, Division of Fish & Wildlife. February 5, 1990 [13 pages].
42.	Sloan, R.J., Skinner, L.C., Horn, E.G., and Karcher, R. An Overview of Mercury Contamination in the Fish of Onondaga Lake, Technical Report 87-1 (BEP). Prepared by New York State Department of Environmental Conservation, Division of Fish & Wildlife. July 1987 [47 pages].
43.	Project Note: to file from Steven T. McNulty, MPI. Subject: Fish Sampling Locations, Mercury Trend Analysis program, 1989 and 1990. March 2, 1992 [8 pages].
44.	Project Note: to file from Steven T. McNulty, MPI. Subject: Data Tables for 1989 and 1990, for mercury concentrations detected in Smallmouth Bass. March 2, 1992 [3 pages].

REFERENCES (continued)

Reference
Number

Description of the Reference

45. Draft Reconnaissance Report, Onondaga Lake, New York. Technical Annex A - Water Quality Technical Report. April/May 1991 [19 pages, nonconsecutive].

SOURCE DESCRIPTION

The following sections provide characterizations of areas evaluated as CERCLA eligible hazardous waste sources for Onondaga Lake. The areas include the following:

- Source Number One - Willis Avenue Plant
- Source Number Two - Bridge Street Plant
- Source Number Three - Semet Residue Ponds
- Source Number Four - Solvay Waste Beds 9 & 10
- Source Number Five - Solvay Waste Bed 11
- Source Number Six - Solvay Waste Bed 12
- Source Number Seven - Solvay Waste Bed 13
- Source Number Eight - Solvay Waste Bed 14
- Source Number Nine - Solvay Waste Bed 15

In addition, there is information indicating that the following items are CERCLA eligible hazardous waste sources:

- Groundwater contamination beneath the Willis Avenue Plant (Ref. Nos. 16; 30; 37; 38).
- Groundwater contamination beneath the former Benzol Plant (Ref. No. 38).
- Soil and groundwater contamination attributable to leakage of a pipeline which transported chlorobenzene residual wastes from the Willis Avenue Plant to Allied Chemical's Main Plant Complex (Ref. Nos. 38; 39).

However, due to a lack of adequate documentation on the extent wastes present at these sources, the three specified areas were not used in determining the HRS score for the site.

SOURCE DESCRIPTION

Evaluation Note: The pages cited in references throughout the documentation record refer to the typewritten page numbers listed on the referenced document. If there is a lack of a typewritten page number, the reference is made to the handwritten numbering (X of Y) in the upper right-hand corner of the referenced document.

2.2 Source Characterization

Number of the source: One

Name and description of the source: Willis Avenue Plant

Allied Chemical operated the Willis Avenue Plant (aka: the East Plant), located on the far northeastern portion of the Main Plant Complex, off Willis Avenue and State Fair Boulevard, Town of Geddes, NY (Ref. Nos. 3, p. 14; 11; 38, pp. 5, 76). The principal business of the facility was the manufacture of chlorine (up to 68 tons per day) and chlorinated benzene products utilizing mercury and diaphragm cell chlor-alkali production processes (Ref. Nos. 3, p. 14; 38, pp. 5-6). The plant, which operated from 1918 until 1977 (Ref. No. 38, p. 5), discharged an aqueous wastestream which contained mercury to Onondaga Lake via the East Flume (Ref. Nos. 3, pp. 14-15; 4, pp. 2; 6, p. 2; 7, p. 88; 21, p. 5). The aqueous discharge was comprised of cooling water generated from the direct cooling of the chlorine produced from the chlor-alkali production process and stormwater runoff from the plant and sections of the Village of Solway (Ref. Nos. 3, pp. 14-15; 5, p. 92; 6, p. 17). This discharge was referred to as Allied Chemical's Outfall No. 001 in a SPDES permit (Ref. Nos. 5, pp. 92, (Fig. 10); 6, p. 5).

Location of the source, with reference to a map of the site:

The Willis Avenue Plant is located near the southeastern shoreline of Onondaga Lake (Ref. Nos. 11; 38, p. 76). The facility is bounded to the north by State Fair Boulevard, to the east by Willis Avenue, to the south by railroad tracks and to the east by the Semet Residue Ponds (Ref. Nos. 11; 38, pp. 5, 76). Cooling water generated during plant operations was routed to several underground collection pipes, which fed the East Flume (Ref. Nos. 3, pp. 14-16; 8, p. 1). The East Flume extended in a north/northeast direction from the plant, releasing into a surface impoundment area adjacent to the lake shoreline (in the vicinity of the land boundary between the City of Syracuse and the Town of Geddes) (Ref. Nos. 3, Fig. 1; 6, p. 22 (Map 2); 8, p. 1; 11). In about 1978, plant effluent was released to the lake at a point located along the southeastern shoreline (Ref. Nos. 3, Fig. 1; 5, p. 92; 8, p. 1). After 1978, the flume's discharge location was extended 900 feet into the lake via a 5 foot diameter pipe, to which a T-shaped thermal diffuser was added (Ref. Nos. 6, p. 22 (Map 2); 8, p. 1; 21, p. 5). The location of the Willis Avenue Plant and the two probable points of entry of the mercury wastestream discharge, are illustrated in Figure 4 (Ref. No. 11).

Containment

Gas/Particulate release to air - Not Evaluated

Release to groundwater - Not Evaluated

Release via overland migration and/or flood

Allied Chemical stated in a letter to the New York State Department of Health (NYSDOH), dated July 21, 1970, that the input of mercury to Onondaga Lake via the East Flume from the Willis Avenue (plant) operation amounted to about 0.5 pounds per day (Ref. No. 4, p. 2). The input of mercury originated from the discharge of a cooling water wastestream generated from the direct cooling of chlorine produced from the mercury cell chlor-alkali production process (Ref. No. 3, pp. 14-15).

2.4 Waste Characteristics

2.4.1 Hazardous Substances (Ref. No. 2)

Source Number One - Willis Avenue Plant

<u>Hazardous Substance</u>	<u>Evidence</u>	<u>Reference</u>
Mercury	Allied Chemical in a letter to the NYSDOH stated that the input of mercury to Onondaga Lake via East Flume from the Willis Avenue (plant) operation amounted to about 0.5 pounds per day. As an attachment to the letter, a graph was enclosed which specified the amount of mercury released to the East Flume between May 20, 1970 and July 16, 1970.	No. 4, pp. 2, 5 No. 25

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

Source Number One - Willis Avenue Plant

Allied Chemical stated in a letter to the NYSDOH, dated July 21, 1970, that the input of mercury to Onondaga Lake via the east flume from the Willis Avenue (plant) operation amounted to about 0.5 pounds per day (Ref. No. 4, p. 2). A graph/plot elaborating on the amount of mercury released to the East Flume between May 20 to July 16, 1970, was enclosed as an attachment to the letter (Ref. No. 4, p. 5). A review/summation of that information indicated that 44.54 pounds of mercury was released during that specified time period (Ref. Nos. 4, p. 5; 25). The total amount of mercury released from the Willis Avenue Plant, cannot be adequately determined from available information. Therefore, since previous wastestream discharges occurred, the quantity of mercury released to Onondaga Lake by Allied Chemical is estimated to be greater than 44.54 pounds (Ref. No. 3, pp. i, 1, 7, 14-15).

Hazardous Waste Quantity (HWQ) - Tier A Hazardous Constituent Quantity

Greater than 44.54 pounds = Greater than 44.54 HWQ

Hazardous Waste Quantity: greater than 44.54 HWQ
Reference(s): No. 4, p. 5; No. 25

SOURCE DESCRIPTION

2.2 Source Characterization

Number of the source: Two

Name and description of the source: Bridge Street Plant

In 1953, Allied Chemical initiated the use of a mercury cell chlor-alkali production process at the Bridge Street Plant (aka: the West Plant), located on Bridge Street, Solvay, NY (Ref. Nos. 3, p. 14; 6, p. 23 (Map 3); 21, p. 6). The plant released mercury in two of three wastestreams discharged to the Geddes Brook via the West Flume (Ref. Nos. 3, pp. 14-15, 17; 4, p. 1; 6, p. 23 (Map 3); 7, p. 88): (1) a caustic soda solution used to neutralize the vent gas in a chlorine line and absorb residual chlorine (Ref. No. 3, pp. 15, 17); and (2) water from the direct cooling of the chlorine, produced by mercury cells utilized in the chlor-alkali production process (Ref. No. 3, pp. 15, 17). The Bridge Street plant discharge was designated as Allied Chemical's Outfall No. 002 in a SPDES Permit (Ref. Nos. 5, p. 92; 6, pp. 5, 23 (Map 3)). Linden Chemicals and Plastics (LCP) purchased the plant from Allied Chemical in 1979 (Ref. Nos. 9, p. IV-3; 21, p. 6). LCP continued to use the mercury cell chlor-alkali production process while upgrading the plants' wastewater treatment system (Ref. No. 21, p. 6). The LCP facility obtained a SPDES permit to discharge a treated plant generated wastestream to the Geddes Brook (Ref. Nos. 9, p. IV-3; 21, p. 6). In 1988, LCP closed the plant to halt the release of mercury into the tributaries of Onondaga Lake (Ref. No. 9, p. IV-3).

Location of the source, with reference to a map of the site:

The Bridge Street Plant is bounded by Bridge Street to the east, an abandoned section of the Erie Canal to the south, and by State Fairgrounds/railroad tracks to the north (Ref. Nos. 6, p. 23 (Map 3); 11). The West Flume originated near the former location of Allied Chemical's soft coal storage area (Ref. Nos. 6, pp. 22-23 (Maps 2 & 3); 38, pp. 6, 79 (Fig. 4)). The flume extended from the plant in a northwest direction for approximately 5,000 feet prior to discharging into the Geddes Brook (Ref. Nos. 6, p. 23 (Map 3); 8, p. 2; 11). The Bridge Street Plant and the probable point of entry for the wastestream discharge (i.e. the West Flume release point located approximately 1.5 miles upstream from Onondaga Lake), are illustrated in Figure 4 (Ref. No. 11).

Containment

Gas/Particulate release to air - Not Evaluated

Release to groundwater - Not Evaluated

Release via overland migration and/or flood

In a letter to the NYSDOH, dated July 21, 1970, Allied Chemical stated that prior to May 9, 1970 the discharge of mercury to the Geddes Brook from the Bridge Street (plant) operation amounted to about 22 pounds per day (Ref. No. 4, p. 1). Downstream of the discharge point, the brook flows into the Nine Mile Creek, a tributary of Onondaga Lake (Ref. Nos. 6, p. 23 (Map 3); 11). Furthermore, it was agreed to in a Stipulation dated September 14, 1970, between the United States Attorney and attorneys representing Allied Chemical, that the average total net discharge of mercury from the either of the two plants (Willis Avenue or Bridge Street) was not to exceed 0.5 pounds per day per plant (Ref. No. 3, p. 11). In December 1972, field surveys were carried out by the EPA to obtain updated information on mercury discharges from Allied

Chemical Corporation (Ref. No. 3, p. 1). EPA data results indicated that the Bridge Street plant discharged 1.12 pounds of mercury on the day of sampling, more than double the 0.5 pound per day limitation (Ref. No. 3, p. 1).

2.4 Waste Characteristics

2.4.1 Hazardous Substances (Ref. No. 2)

Source Number Two - Bridge Street Plant

<u>Hazardous Substance</u>	<u>Evidence</u>	<u>Reference</u>
Mercury	Allied Chemical in a letter to the NYSDOH stated that prior to May 9, 1970, the discharge of mercury to the Geddes Brook from the Bridge Street (plant) operation amounted to about 22 pounds per day. As an attachment the letter, a graph was enclosed which specified to amount of mercury released to the West Flume between May 8, 1970 and July 16, 1970.	No. 4, pp. 1, 8 No. 26

2.4.2 Hazardous Waste Quantity

2.4.2.1.1 Hazardous Constituent Quantity

Source Number Two - Bridge Street Plant

Allied Chemical stated in a letter to the NYSDOH, dated July 21, 1970, that prior to May 9, 1970, the discharge of mercury to the Geddes Brook from the Bridge Street (plant) operation amounted to about 22 pounds per day (Ref. No. 4, p. 1). A graph/plot detailing the amount of mercury released to the West Flume, between May 8 and July 16, 1970, was enclosed as an attachment to the letter (Ref. No. 4, p. 8). A review/summation of that plot, indicated that 215.45 pounds of mercury was released during the specified time period (Ref. Nos. 4, p. 8; 26). The historical amount of mercury discharged from the Bridge Street Plant, cannot be adequately determined from available information. Therefore, the constituent quantity of mercury released from the plant is estimated to be greater than 215.45 pounds, due to historical wastestream discharges previously released from the plant (Ref. Nos. 3, pp. 1, 1, 7, 14-15, 17; 4, p. 1).

Hazardous Waste Quantity (HWQ) - Tier A Hazardous Constituent Quantity

Greater than 215.45 pounds = Greater than 215.45 HWQ

Hazardous Waste Quantity: Greater than 215.45 HWQ
Reference(s): No. 4, p. 8; No. 26

SOURCE DESCRIPTION

2.2 Source Characterization

Number of source: Three

Name and description of the source: Semet Residue Ponds

From 1917 to 1970, Allied Chemical operated the Benzol (BTX) Plant which produced benzol, toluol, xylo, and "motor benzol" (Ref. No. 32, p. 15). The products were produced from the fractional distillation of light oil, which in turn was formed as a by-product in the high temperature destructive distillation of coal (Ref. No. 32, p. 15). An Allied Signal report states that a typical composition of 3.2 gallons of light oil (obtained from 2000 lbs. of coal) is comprised of the following (Faith et al., 1957 as quoted in Ref. No. 32, p. 15):

<u>Component</u>	<u>Gallon(s)</u>
Benzene	1.85
Toluene	0.45
Xylenes and light-solvent naphthas	0.30
Unsaturated hydrocarbons (acid wash)	0.16
Heavy hydrocarbons and naphthalene	0.24
Wash Oil	0.20

Five irregularly shaped ponds with no evidence of a liner, were used for the disposal of an organic-based Semet Residue, generated by the acid washing of the specified coke light oil, prior to fractionation (Ref. No. 32, pp. 3-4, 16). The Semet Residue is composed of over 100 organic compounds, primarily aromatic hydrocarbons, substituted aromatic hydrocarbons, alkanes, substituted alkanes, polyaromatic hydrocarbons, aldehydes, and ketones (Ref. No. 33, p. 97). Allied Chemical stated that benzene, toluene, xylene, and naphthalene comprise 10% to 12% of the organic phase of the residue material (Ref. Nos. 29, p. 2; 33, p. 97). Prior to 1917, the location of the ponds was utilized for the disposal of Solvay Waste (Allied Solvay Waste Bed A)(Ref. Nos. 10, p. 3-8; 32, p. 3). Other materials known to be deposited in the lagoons include coarse ash and clinders from stoker-fired boilers located at the Syracuse Works, calcium carbonate rich waste material derived from past ammonium chloride operations, and metallic objects (i.e. corroded tanks, drums and piping observed at the surface of the ponds)(Ref. No. 32, pp. 3, 27). The ponds were managed as disposal areas from 1917 to 1970, by the Semet-Solvay Division of the Allied Chemical and Dye Corporation (Ref. No. 32, pp. 3-4).

Location of the source, with reference to a map of the site:

The Semet Residue Ponds are located near the southern shoreline of Onondaga Lake (Ref. Nos. 11; 32, p. 63 (Fig. 2)), bounded to the north by State Fair Boulevard, to the east by Willis Avenue, to the south by railroad tracks, and to the west by the Crucible Steel Company (Ref. No. 32, p. 4). Solvay Waste Bed A, upon which the ponds were constructed, is located several hundred feet from the southern lake shoreline (Ref. No. 10, p. 3-8). The Semet Residue Ponds location is illustrated in Figure 4 (Ref. No. 11).

Containment

Gas/Particulate release to air - Not Evaluated

Release to groundwater - Not Evaluated

Release to surface water

Organic and inorganic constituents were detected at elevated levels in surface water and sediment samples, collected from Tributary 5A and Onondaga Lake, surrounding the location of the Semet Residue Ponds (Ref. Nos. 32, pp. 21-22; 33, Tables 8, 9, 14, 16, 17, 20, Fig. 11; 37, pp. 1, 5-7, 10-17, 21-28). The pond locations are encapsulated by a system of berms and dikes, that minimize, but do not eliminate the potential of contaminant migration via horizontal drainage and via leachate seeps (Ref. No. 32, pp. 24, 27). However, the probable main mechanism of organic contaminant transport to surface water is by means of groundwater to surface water discharge, as organic compounds released to the unconsolidated aquifer beneath the lagoons, are ultimately discharged to the lake (Ref. Nos. 32, pp. 22-23; 33, pp. 98-99; 36, pp. 2, 6-12). Consultants for Allied Chemical verified the transport of approximately 0.01 pounds of benzene per day into Onondaga Lake, as a result of a contaminated groundwater flow to surface water (Ref. No. 32, p. 23; 36, p. 2).

2.4 Waste Characteristics

2.4.1 Hazardous Substances (Ref. No. 2)

Evaluation Note: There are numerous CERCLA eligible hazardous substances detected at elevated levels within the Semet Residue material that were screened for the evaluation of this source (Ref. Nos. 29, p. 2; 33, p. 97). However, this assessment was limited to substances that possess bioaccumulation factors equal to or greater than 500, since these substances probably pose the greatest threat to the surface water fisheries and the environment, which are the primary targets affected by the waste disposal activity which occurred at the Semet Residue Ponds (Ref. No. 2).

Source Number Three - Semet Residue Ponds

<u>Hazardous Substances</u>	<u>Evidence</u>	<u>Reference</u>
Anthracene Benzene Cresols Cumene Fluorene Naphthalene Phenanthrene Pyridine Toluene Xylene	Allied Chemical in a letter to the NYSDEC regarding data on the Semet Residue Pond site, provided a list of compounds found in Semet Residue Waste samples previously collected and analyzed.	No. 29, pp. 1-2

2.4.1 Hazardous Waste Quantity

2.4.2.1.3 Volume

Source Number Three - Semet Residue Ponds

Based on the interpolation of an aerial photograph by Allied Signal (with the use of estimated pond depths), the volume of Semet Residue material deposited in the five ponds is estimated at 72.72 million gallons (Ref. No. 32, p. 16).

Hazardous Waste Quantity (HWQ) - Tier C Volume (Surface Impoundment)

Conversion of units (Ref. No. 1, p. 51591)

72.72 million gallons X (1 cubic yard/200 gallons) = 363,600 cubic yards

Surface Impoundment HWQ evaluation equation (Ref. No. 1, p. 51591)

$$\frac{\text{Volume}}{2.5} = \frac{363,600 \text{ cubic yards}}{2.5} = 145,440 \text{ HWQ}$$

Hazardous Waste Quantity: 145,440 HWQ
Reference(s): No. 1, p. 51591; No. 32, p. 16

SOURCE DESCRIPTION

General Source Description

The Solvay Waste Beds are large areas known to have accepted the by-products of the Solvay Process utilized by Allied Chemical for the production of sodium carbonate (soda ash) (Ref. No. 10, pp. 2-(1,3)). Solvay Waste consists primarily of calcium carbonate, calcium silicate, and magnesium hydroxide with small amounts of carbonates, sulfates, salts and metal oxides, but may contain trace amounts of several hazardous inorganic substances (Ref. No. 10, pp. 1-(1,2), 2-5, 99 (Table 1)). The concentration levels of several CERCLA eligible inorganic constituents in one sample of Solvay Waste were determined by Calocerinos & Spina (1980a) (Ref. No. 10, p. 99 (Table 1)). Twenty areas (Waste Beds 1 through 15 & A through E) were identified by Allied Signal as Solvay Waste Bed locations (Ref. No. 10, pp. 2-3, 103 (Fig. 1)). An additional eight areas (F through M) were classified as possible Waste Disposal Areas, but due to the length of time since the possible Solvay Waste deposition, there is a lack of documentation in regards to the location and thickness of waste in these areas (Ref. No. 10, pp. 2-3, 3-(3,4), 103 (Fig. 1)).

Sufficient documentation is available to evaluate Solvay Waste Beds 9 through 15. The beds were used for the disposal of Solvay Waste, mercury, and/or asbestos (only in Beds 12 through 15) (Ref. Nos. 4, p. 3; 10, pp. 3-(13, 15-18), 104). Allied Chemical estimated that up to 1 pound per day of mercury was deposited into the Waste Beds 9 through 15, when utilized for mercury contaminated boiler fly ash disposal (Ref. Nos. 4, p. 3; 10, pp. 3-(13, 15-18)). Any overflows from the Willits Avenue or Bridge Street Plants, that contained suspended solids or any from which mercury could be precipitated out of in the form of mercuric sulfide, were pumped to Waste Beds 12 through 15 (Ref. Nos. 3, p. 14; 10, pp. 3-(15-18)). Asbestos in the form of a slurry mixture, was additionally deposited in Waste Beds 12 through 15 (Ref. No. 10, pp. 3-(15-18)). Also, LCP historically discharged wastewater to Waste Bed 14 until the closure of the Bridge Street Plant (Ref. Nos. 9, p. IV-3; 10, p. 1-5). Other Solvay Waste Beds were not included in this evaluation because of a lack of sufficient documentation regarding the presence of CERCLA hazardous substances (Ref. No. 10, pp. 3-(3-7), 103-107 (Fig. 1)).

2.2 Source Characterization

Number of source: Four

Name and description of the source: Solvay Waste Beds 9 & 10

In 1944, the disposal of Solvay Waste into Beds 9 & 10 was initiated and continued until 1968 (Ref. No. 10, p. 3-13). Historical information indicates that Waste Beds 9 & 10 were initially separated by a dike during their filling, but the dike is no longer apparent (Ref. No. 10, p. 4-9). In addition to Solvay Waste, the beds received brine purification sediments, boiler water purification wastes, boiler bottom and fly ash (Ref. No. 10, p. 3-13). An estimate of about one pound per day of mercury was deposited into the beds, when utilized for boiler fly ash disposal by Allied Chemical (Ref. No. 4, p. 3). The total quantity of mercury (Disposal Time Period (DTP): 1951 to 1968) deposited into the beds in the mercury contaminated boiler fly ash is unknown, but greater than zero pounds (Ref. Nos. 4, p. 3; 10, p. 3-13). Subsequent to the final use of the bed for waste disposal, it was vegetated as part of a formal reclamation program (Ref. No. 10, pp. 3-13, 4-9).

Location of the source with reference to a map of the site:

Waste Beds 9 & 10 cover approximately 73.5 acres at their base, and are illustrated as a Tailings Pond on USGS Topographic Map(s) (Ref. Nos. 10, pp. 3-13, 109 (Fig. 6); 11). Located approximately one mile northwest of the Bridge Street Plant, the beds are bordered to the north by a golf course, to the west by an interbed area/Waste Bed 11, and to the south and east by Nine Mile Creek (Ref. Nos. 10, pp. 3-13, 109 (Fig. 6); 11).

Containment

Gas/Particulate release to air - Not Evaluated

Release to groundwater - Not Evaluated

Release via overland migration and/or flood

Solvay Waste Beds 9 & 10 have an incomplete vegetative cover (Ref. No. 10, pp. 4-(9,10)). Horizontal drainage of the area occurs via overflows of dikes constructed around the perimeter and between the beds, which feed to drainage ditches (Ref. Nos. 10, pp. 3-13, 109 (Fig. 6), 111). While the runoff from the northern portion of the beds drains to ponded areas in a evaporation ditch, the overland flow and leachate from the remaining side slopes is channeled to either culvert/pipe discharge locations or leachate seepage areas, which discharge into Nine Mile Creek (Ref. No. 10, pp. 4-10, 109-111 (Fig. 6)). There is no mention of a liner under this source or any underground leachate collection and treatment system (Ref. No. 10, pp. 3-13, 4-(9,10)).

2.4 Waste Characteristics

2.4.1 Hazardous Substances (Ref. No. 2)

Source Number Four - Solvay Waste Beds 9 & 10

<u>Hazardous Substances</u>	<u>Evidence</u>	<u>Reference</u>
Arsenic	Allied Signal noted the concentration levels of inorganic constituents in the Solvay Waste material in information provided in the Hydrogeologic Assessment of the Allied Waste Beds in the Syracuse Area.	No. 4, p. 3
Cadmium		No. 10, pp.
Chromium		2-5, 99 (Table 1)
Copper	Allied Chemical in a letter to the NYSDOH stated that analysis indicated that the disposal of fly ash carried about one pound per day of mercury to the beds.	
Lead		
Mercury		
Nickel		
Zinc		

2.4.2 Hazardous Waste Quantity

2.4.2.1.3 Volume

Source Number Four - Solvay Waste Beds 9 & 10

In a Allied Signal report, the volume of material deposited in Waste Beds 9 & 10 is estimated to be 8.3 million cubic yards (Ref. No. 10, pp. 3-13, 101 (Table 3)). The beds are treated as a single source since the dike that segregated the areas, is no longer apparent (i.e. presumably filled in with waste material) (Ref. No. 10, pp. 4-9, 101 (Table 3)).

Hazardous Waste Quantity (HWQ) - Tier C Volume (Surface Impoundment)

Surface Impoundment HWQ evaluation equation (Ref. No. 1, p. 51591)

$$\text{Volume} = \frac{8,300,000 \text{ cubic yards}}{2.5} = \frac{3,320,000 \text{ HWQ}}{2.5}$$

Hazardous Waste Quantity: 3,320,000 HWQ
Reference(s): No. 1, p. 51591; No. 10, pp. 3-13, 101 (Table 3)

SOURCE DESCRIPTION

2.2 Source Characterization

Number of the source: Five

Name and description of the source: Solvay Waste Bed 11

In 1944, Allied Chemical initiated the disposal of Solvay Waste into Bed 11 and continued that practice until 1968 (Ref. No. 10, p. 3-13). In addition to Solvay Waste, the bed received brine purification sediments, boiler water purification wastes, boiler bottom and fly ash (Ref. No. 10, p. 3-13). An estimate of about one pound per day of mercury was deposited into the beds by Allied Chemical, when utilized for the disposal of boiler fly ash (Ref. No. 4, p. 3). The exact quantity of mercury (DTP: 1951 to 1968) deposited in the bed, is unknown but greater than zero pounds (Ref. Nos. 4, p. 3; 10, p. 3-13). Subsequent to the final use of the bed for Solvay Waste disposal, it was vegetated as part of a formal reclamation program (Ref. No. 10, p. 3-13).

Location of the source with reference to a map of the site:

Waste Bed 11 covers approximately 52.8 acres, and is identified as a Tailings Pond on USGS Topographic Map(s) (Ref. Nos. 10, p. 3-13; 11). Located approximately 1.25 miles northwest of the Bridge Street Plant, the bed is bordered to the north and west by open land and private residences, to the south by Nine Mile Creek, and to the east by the "interbed" area (isolating Beds 9 & 10) (Ref. Nos. 10, pp. 3-13, 109 (Fig. 6); 11).

Containment

Gas/Particulate release to air - Not Evaluated

Release to groundwater - Not Evaluated

Release via overland migration and/or flood

Solvay Waste Bed 11 may have a complete vegetative cover (Ref. No. 10, pp. 4-(9,10), 109 (Fig. 6), 110). Bed drainage occurs via overflows of a system of dikes to drainage ditches, which were constructed around the perimeter of the bed (Ref. No. 10, pp. 3-13, 109-111 (Fig. 6)). While the runoff from the northern portion of the beds drains to a ponded area in a evaporation ditch, the overland flow and leachate from the remaining side slopes is channeled to either culvert/pipe discharge locations or leachate seepage areas, which empty into Nine Mile Creek (Ref. No. 10, pp. 4-10, 109-111 (Fig. 6)). There is no mention of a liner under this source or any underground leachate collection and treatment system (Ref. No. 10, pp. 3-13, 4-(9,10)).

2.4 Waste Characteristics

2.4.1 Hazardous Substances (Ref. No. 2)

Source Number Five - Solvay Waste Bed 11

<u>Hazardous Substances</u>	<u>Evidence</u>	<u>Reference</u>
Arsenic	Allied Signal noted the concentration levels of inorganic constituents in the Solvay Waste material in information provided in the Hydrogeologic Assessment of the Allied Waste Beds in the Syracuse Area.	No. 4, p. 3 No. 10, pp. 2-5, 99 (Table 1)
Cadmium		
Chromium		
Copper		
Lead	Allied Chemical in a letter to the NYSDOH stated that analysis indicated that the disposal of fly ash carried about one pound per day of mercury to the beds.	
Mercury		
Nickel		
Zinc		

2.4.2 Hazardous Waste Quantity

2.4.2.1.3 Volume

Source Number Five - Solvay Waste Bed 11

In a Allied Signal report, the volume of material deposited in Waste Bed 11 is estimated to be 5.96 million cubic yards (Ref. No. 10, pp. 3-13, 102 (Table 3)).

Hazardous Waste Quantity (HWQ) - Tier C Volume (Surface Impoundment)

Surface Impoundment HWQ evaluation equation (Ref. No. 1, p. 51591)

$$\text{Volume} = \frac{5,960,000 \text{ cubic yards}}{2.5} = 2,384,000 \text{ HWQ}$$

Hazardous Waste Quantity: 2,384,000 HWQ
Reference(s): No. 1, p. 51591; No. 10, pp. 3-13, 101 (Table 3)

SOURCE DESCRIPTION

2.2 Source Characterization

Number of source: Six

Name and description of the source: Solvay Waste Bed 12

In 1950, an Allied Chemical conducted an investigation to determine the feasibility of depositing Solvay Waste at the location of Beds 12 through 15 (Ref. No. 10, p. 3-14). Afterwards, dikes surrounding the Bed 12 were constructed in 1951, with filling beginning sometime between 1951 and 1959 (Ref. No. 10, p. 3-14). The bed received Solvay Waste, brine purification sediments, treated mercury cell waste water, boiler purification sediments, boiler bottom and fly ash, Willis Avenue Plant waste water discharge and asbestos slurry (Ref. No. 10, pp. 3-(14,15)). An estimate of about one pound per day of mercury was disposed of into the beds, when utilized for mercury contaminated boiler fly ash disposal by Allied Chemical (Ref. No. 4, p. 3). However, the exact quantities of mercury (DTP: 1970 to 1972) and asbestos (DTP: 1968 to 1972) deposited into the bed are unknown, but greater than zero pounds (Ref. Nos. 3, p. 14; 4, p. 3; 10, p. 3-15). In 1972 the bed ceased to receive wastes associated with Allied Chemical's operations, and a formal reclamation process was initiated (Ref. No. 10, p. 3-15). In addition to Allied Chemical wastes though, Onondaga County placed sanitary sludge in trenches on top of this bed from the summer of 1986 until January 1987 (Ref. No. 10, p. 3-15).

Location of the source with reference to a map of the site:

Waste Bed 12 covers approximately 128.6 acres at its base, and is identified as a Tailings Pond on USGS Topographic Map(s) (Ref. Nos. 10, p. 3-14; 11). Located approximately one mile east of Bridge Street Plant, the waste bed is bordered to the north by railroad tracks, to the east by a detention basin engineered to collect overflows from Waste Beds 12 through 15, to the south by an abandoned section of the Erie Canal, and to the west by Solvay Waste Beds 13 & 14 (Ref. No. 10, pp. 3-14, 109 (Fig. 6); 11).

Containment

Gas/Particulate Release to air - Not Evaluated

Release to groundwater - Not Evaluated

Release via overland migration and/or flood

Solvay Waste Bed 12 has at least a partial vegetative cover (Ref. No. 10, pp. 4-11, 109 (Fig. 6), 111). Drainage of bed overflows of a system of dikes, which feed discharge boxes and drainage ditches constructed along the perimeter of the bed (Ref. Nos. 6, p. 23 (Map 3); 10, pp. 4-(11,12)). The combined flows of stormwater runoff and leachate seepage are channeled from drainage ditches to retention basins located to the east of Bed 12 (Ref. No. 10, p. 4-12). The retention basins are operated by the County Department of Drainage and Sanitation (Ref. No. 21, pp. 4-5) and the liquids collected are pumped to the Metropolitan Sewage Treatment Plant (MSTP) (Ref. No. 10, p. 4-12). Prior to the successful rerouting of overflows in 1986 (approx.) to the MSTP (Ref. No. 8, p. 2), the dike/ditch drainage system conveyed a mercury wastestream discharge directly into the Geddes Brook (Ref. Nos. 5, p. 93; 6, pp. 5, 23 (Map 3)). The discharge to the brook was identified in Allied Chemical's SPDES Permit as Outfall No. 003 (Ref. Nos.

5, p. 93; 6, p. 23 (Map 3)). There is no mention of a liner under this source or any underground leachate collection and treatment system (Ref. No. 10, pp. 3-(14,15), 4-(10-12)).

2.4 Waste Characteristics

2.4.1 Hazardous Substances

<u>Hazardous Substances</u>	<u>Evidence</u>	<u>Reference</u>
Arsenic	In an Allied Signal report, Hydrogeologic Assessment of the	No. 4, p. 3
Asbestos	Allied Waste Beds in the Syracuse Area, the concentration	No. 10, pp.
Cadmium	levels of inorganic constituents detected in the Solvay Waste	2-5, 3-15
Chromium	material was tabulated.	99 (Table 1)
Copper	Allied Chemical in a letter to the NYSDOH stated that analysis	
Lead	indicated that the disposal of fly ash carried about one pound	
Mercury	per day of mercury to the beds.	
Nickel	In the Allied Signal report mentioned above, it was stated that	
Zinc	treated mercury cell wastewater and asbestos slurry was deposited	
	in the Waste Bed 12.	

2.4.2 Hazardous Waste Quantity

2.4.2.1.3 Volume

Source Number Six - Solvay Waste Bed 12

In a Allied Signal report, the volume of material deposited in Waste Bed 12 was estimated to be 11.4 million cubic yards (Ref. No. 10, pp. 3-14, 101 (Table 3)).

Hazardous Waste Quantity (HWQ) - Tier C Volume (Surface Impoundment)

Surface Impoundment HWQ evaluation equation (Ref. No. 1, p. 51591)

$$\text{Volume} = \frac{11,400,000 \text{ cubic yards}}{2.5} = 4,560,000 \text{ HWQ}$$

Hazardous Waste Quantity: 4,560,000 HWQ
Reference(s): No. 1, p. 51591; No. 10, pp. 3-14, 101 (Table 3)

SOURCE DESCRIPTION

2.2 Source Characterization

Number of the source: Seven

Name and description of the source: Solvay Waste Bed 13

Waste Bed 13 was utilized for the disposal of Solvay Waste, brine purification sediments, boiler bottom and fly ash, boiler water purification sediments, asbestos slurry and treated mercury cell waste water, from 1973 to 1985 by Allied Chemical (Ref. No. 10, p. 3-16). An estimate of about one pound per day of mercury was disposed of into the beds, when utilized for mercury contaminated boiler fly ash disposal by Allied Chemical (Ref. No. 4, p. 3). The exact quantities of mercury (DTP: 1973 to 1977) and asbestos (DTP: 1975 to 1985) deposited by Allied Chemical are unknown, but greater than zero pounds (Ref. Nos. 4, p. 3; 10, p. 3-16).

Location of the source with reference to a map of the site:

The base of Waste Bed 13 occupies approximately 163 acres, and is illustrated as a Tailings Pond on USGS Topographic Map(s) (Ref. Nos. 10, p. 3-15; 11). Located approximately one to two miles west of Bridge Street Plant, the bed is bordered to the north by Nine Mile Creek and railroad tracks, to the west by residences and the Onondaga County Garage, and to the east and south by Waste Beds 12 & 14, respectively (Ref. Nos. 10, pp. 3-15, 109 (Fig. 6); 11).

Containment

Gas/Particulate Release to air - Not Evaluated

Release to groundwater - Not Evaluated

Release via overland migration and/or flood

Solvay Waste Bed 13 has an incomplete vegetative cover (Ref. No. 10, pp. 4-11, 109 (Fig. 6), 111). Surface drainage occurs via overflows of a system of dikes, which feed to discharge boxes and drainage ditches that were constructed along the perimeter of the bed (Ref. Nos. 6, p. 23 (Map 3); 10, pp. 4-(11,12)). The sum flows of stormwater runoff and leachate seepage is presently channeled via drainage ditches to retention basins located to the east of Waste Bed 12 (Ref. Nos. 10, p. 4-12). The liquid collected in the basins is pumped to the MSTP (Ref. No. 10, p. 4-12). Prior to the successful rerouting of overflows in 1986 (approx.) to the MSTP (Ref. No. 8, p. 2), the drainage system released directly to the Geddes Brook, at a location identified in Allied Chemical's SPDES Permit as Outfall No. 003 (Ref. Nos. 5, pp. 93, 97; 6, pp. 5, 23 (Map 3)). There is no mention of a liner under this source or any underground leachate collection and treatment system (Ref. No. 10, pp. 3-(15,16), 4-(10-12)).

2.4 Waste Characteristics

2.4.1 Hazardous Substances (Ref. No.2)

Source Number Seven - Solvay Waste Bed 13

<u>Hazardous Substances</u>	<u>Evidence</u>	<u>Reference</u>
Arsenic	In an Allied Signal report, Hydrogeologic Assessment of the Allied Waste Beds in the Syracuse Area, the concentration levels of inorganic constituents detected in the Solvay Waste material was tabulated.	No. 4, p. 3
Asbestos		No. 10, pp.
Cadmium		2-5, 3-16
Chromium		99 (Table 1)
Copper	Allied Chemical in a letter to the NYSDOH stated that analysis indicated that the disposal of fly ash carried about one pound per day of mercury to the beds.	
Lead		
Mercury	In the Allied Signal report mentioned above, it was stated that treated mercury cell wastewater and asbestos slurry was deposited in the Waste Bed 13.	
Nickel		
Zinc		

2.4.2 Hazardous Waste Quantity

2.4.2.1.3 Volume

Source Number Seven - Solvay Waste Bed 13

In a Allied Signal report, the volume of material deposited in Waste Bed 13 was estimated to be 14.5 million cubic yards (Ref. No. 10, pp. 3-15, 101 (Table 3)).

Hazardous Waste Quantity (HWQ) - Tier C Volume (Surface Impoundment)

Surface Impoundment HWQ evaluation equation (Ref. No. 1, p. 51591)

$$\text{Volume} = \frac{14,500,000 \text{ cubic yards}}{2.5} = 5,800,000 \text{ HWQ}$$

Hazardous Waste Quantity: 5,800,000 HWQ
Reference(s): No. 1, p. 51591; No. 10, pp. 3-15, 101 (Table 3)

SOURCE DESCRIPTION

2.2 Source Characterization

Number of the source: Eight

Name and description of the source: Solvay Waste Bed 14

Subsequent to the construction of a drainage system, in 1959 the active placement of Solvay Waste into Bed 14 was well underway (Ref. No. 10, p. 3-17). Solvay Waste, brine purification sediment, boiler water purification sediment, boiler bottom and fly ash, Willis Avenue Plant waste water, asbestos slurry and treated mercury cell waste water, were deposited into the bed by Allied Chemical (Ref. No. 10, p. 3-17). An estimate of about one pound per day of mercury was deposited of into the beds, when utilized for mercury contaminated boiler fly ash disposal by Allied Chemical (Ref. Nos. 4, p. 3). The exact quantities of mercury (DTP: 1970 to 1977) and asbestos (DTP: 1968 to 1985) disposed of into the Waste Bed 14 are unknown, but greater than zero pounds (Ref. Nos. 4, p. 3; 10, p. 3-17). LCP also used the bed for the disposal of wastewater generated from the washing of old asbestos coatings of cathodes, which were periodically removed the diaphragm cells in the LCP chlor-alkali plant (Ref. Nos. 10, p. 1-5; 21, p. 8).

Location of the source with reference to a map of the site:

Waste Bed 14 occupies approximately 133.4 acres at its base, and is identified as a Tailings Pond on USGS Topographic Map(s) (Ref. Nos. 10, p. 3-16, 109 (Fig. 6); 11). Located approximately one to two miles west of the Bridge Street Plant, the bed is bounded to the north by Waste Bed 13, to the east by Waste Bed 12, to the south by Waste Bed 15 and an abandoned section of the Erie Canal, and to the west by private residences and light industry (Ref. No. 10, pp. 3-16, 109 (Fig. 6); 11).

Containment

Gas/Particulate release to air - Not Evaluated

Release to groundwater - Not Evaluated

Release via overland migration and/or flood

Waste Bed 14 has an incomplete vegetative cover (Ref. No. 10, pp. 4-11, 109 (Fig. 6), 111). Bed drainage occurs through overflows a system of dikes, which feed to discharge boxes and drainage ditches constructed surrounding the bed (Ref. Nos. 6, p. 23 (Map 3); 10, pp. 4-(11,12)). The sum flows of stormwater runoff and leachate seepage channeled to the drainage ditches, is diverted to retention basins located to the east of Waste Bed 12 (Ref. No. 10, pp. 4-12, 109 (Fig. 6)). The liquid collected in the retention basins is pumped to the MSTP (Ref. No. 10, p. 4-12). Prior to the successful rerouting of overflows in 1986 (approx.) to the MSTP (Ref. No. 8, p. 2), the drainage system discharged directly into the Geddes Brook, at a location identified in Allied Chemical's SPDES Permit as Outfall No. 003 (Ref. Nos. 5, pp. 93, 97; 6, pp. 5, 23 (Map 3)). There is no mention of a liner under this source or any underground leachate collection and treatment system (Ref. No. 10, pp. 3-(16,17), 4-(10-12)).

2.4 Waste Characteristics

2.4.1 Hazardous Substances (Ref. No. 2)

Source Number Eight - Solvay Waste Bed 14

<u>Hazardous Substances</u>	<u>Evidence</u>	<u>Reference</u>
Arsenic	In an Allied Signal report, Hydrogeologic Assessment of the	No. 4, p. 3
Asbestos	Allied Waste Beds in the Syracuse Area, the concentration	No. 10, pp.
Cadmium	levels of inorganic constituents detected in the Solvay Waste	2-5, 3-17
Chromium	material was tabulated.	99 (Table 1)
Copper	Allied Chemical in a letter to the NYSDOH stated that analysis	
Lead	indicated that the disposal of fly ash carried about one pound	
Mercury	per day of mercury to the beds.	
Nickel	In the Allied Signal report mentioned above, it was stated that	
Zinc	treated mercury cell wastewater and asbestos slurry was deposited	
	in the Waste Bed 14.	

2.4.2 Hazardous Waste Quantity

2.4.2.1.3 Volume

Source Number Eight - Solvay Waste Bed 14

In a Allied Signal report, the volume of material deposited in Waste Bed 14 was estimated to be 11.8 million cubic yards (Ref. No. 10, pp. 3-16, 101 (Table 3)).

Hazardous Waste Quantity (HWQ) - Tier C Volume (Surface Impoundment)

Surface Impoundment HWQ evaluation equation (Ref. No. 1, p. 51591)

$$\text{Volume} = \frac{11,800,000 \text{ cubic yards}}{2.5} = 4,720,000 \text{ HWQ}$$

Hazardous Waste Quantity: 4,720,000 HWQ
Reference(s): No. 1, p. 51591; No. 10, pp. 3-16, 101 (Table 3)

SOURCE DESCRIPTION

2.2 Source Characterization

Number of the source: Nine

Name and description of the source: Solvay Waste Bed 15

Solvay Waste Bed 15 began receiving wastes in 1975 (Ref. No. 10, p. 3-18); these wastes included Solvay Waste, brine purification sediment, treated mercury cell waste water, boiler purification water sediment, boiler bottom and fly ash, some Willis Avenue Plant waste water and asbestos slurry were disposed of into the bed (Ref. No. 10, p. 3-18). Additionally, the western portion of the bed received demolition debris from the razing of buildings from Allied Chemical's main plant area and the eastern have received a layer of sewage treatment plant sludge (Ref. No. 10, p. 3-18). An estimate of about one pound per day of mercury was deposited into the bed, when utilized for mercury contaminated boiler fly ash disposal by Allied (Ref. No. 4, p. 3). The exact quantities of mercury (DTP: 1975 to 1977) and asbestos (DTP: 1975 to 1985) disposed of into the bed are unknown, but greater than zero pounds (Ref. No. 10, p. 3-18).

Location of the source with reference to a map of the site:

Waste Bed 15 occupies an estimated land area of 111.3 acres, and is depicted as a Tailings Pond on USGS Topographic Map(s) (Ref. Nos. 10, pp. 3-17, 109 (Fig. 6); 11). Located approximately one to two miles west of the Bridge Street Plant, the bed is bordered to the north by Waste Beds 12 & 14 (plus an abandoned section of the Erie Canal), and by private residences/open land to the south, east and west (Ref. Nos. 10, pp. 3-(17,18); 11).

Containment

Gas/Particulate release to air - Not Evaluated

Release to groundwater - Not Evaluated

Release via overland migration and/or flood

A site reconnaissance noted the lack of a vegetative cover upon Waste Bed 15 (Ref. No. 10, pp. 4-11, 109 (Fig. 6), 111). Surface drainage of the bed occurs via overflows of dikes, which feed discharge boxes and drainage ditches bisecting the bed to the east and west (Ref. Nos. 6, p. 23 (Map 3); 10, pp. 4-(11,12)). Overland runoff and leachate seepage flows through the dike system, until discharging into retention basins located to the east of Waste Bed 12 (Ref. No. 10, pp. 4-(11,12)). The liquid collected in the retention basins is pumped to the MSTP (Ref. No. 10, p. 4-12). Prior to the successful rerouting of overflows in 1986 (approx.) to the MSTP (Ref. No. 8, p. 2), the drainage system discharged to the Geddes Brook, at a location identified in Allied Chemical's SPDES Permit as Outfall No. 003 (Ref. Nos. 5, pp. 93, 97; 6, pp. 5, 23 (Map 3)). There is no mention of a liner under this source or any underground leachate collection and treatment system (Ref. No. 10, pp. 3-(17,18), 4-(10-12)).

2.4 Waste Characteristics

2.4.1 Hazardous Substances (Ref. No. 2)

Source Number Nine - Solvay Waste Bed 15

<u>Hazardous Substances</u>	<u>Evidence</u>	<u>Reference</u>
Arsenic Asbestos Cadmium Chromium Copper Lead Mercury Nickel Zinc	In an Allied Signal report, Hydrogeologic Assessment of the Allied Waste Beds in the Syracuse Area, the concentration levels of inorganic constituents detected in the Solvay Waste material was tabulated. Allied Chemical in a letter to the NYSDOH stated that analysis indicated that the disposal of fly ash carried about one pound per day of mercury to the beds. In the Allied Signal report mentioned above, it was stated that treated mercury cell wastewater and asbestos slurry was deposited in the Waste Bed 15.	No. 4, p. 3 No. 10, pp. 2-5, 3-18, 99 (Table 1)

2.4.2 Hazardous Waste Quantity

2.4.2.1.3 Volume

Source Number Nine - Solvay Waste Bed 15

In a Allied Signal report, the volume of material deposited in Waste Bed 15 was estimated to be 4.49 million cubic yards (Ref. No. 10, pp. 3-17, 101 (Table 3)).

Hazardous Waste Quantity (HWQ) - Tier C Volume (Surface Impoundment)

Surface Impoundment HWQ evaluation equation (Ref. No. 1, p. 51591)

$$\text{Volume} = \frac{4,490,000 \text{ cubic yards}}{2.5} = 1,796,000 \text{ HWQ}$$

Hazardous Waste Quantity: 1,796,000 HWQ
Reference(s): No. 1, p. 51591; No. 10, pp. 3-17, 101 (Table 3)

2.4.2 Hazardous Waste Quantity

2.4.2.1.5 Source Hazardous Waste Quantity Values

SITE SUMMARY OF SOURCE DESCRIPTIONS

<u>Source No.</u>	<u>Source Hazardous Waste Quantity Value</u>	<u>Containment</u>			
		<u>Ground Water</u>	<u>Surface Water</u>	<u>Air Gas</u>	<u>Air Particulate</u>
1	> 44.54	NE	10	NE	NE
2	> 215.45	NE	10	NE	NE
3	145,440	NE	10	NE	NE
4	3,320,000	NE	10	NE	NE
5	2,384,000	NE	10	NE	NE
6	4,560,000	NE	10	NE	NE
7	5,800,000	NE	10	NE	NE
8	4,720,000	NE	10	NE	NE
9	<u>1,796,000</u>	NE	10	NE	NE

Total Hazardous Waste
Quantity for

Not Evaluated => NE

Onondaga Lake > 22,725,700

* - A containment factor of 10 was assigned to each source characterized for Onondaga Lake, due to evidence of hazardous substance migration from the source locations.

2.4.2.2 Hazardous Waste Quantity Factor Value

The sum of the hazardous waste quantiles for the sources at Onondaga Lake is greater than 22,725,700. Therefore, the factor value assigned is 1,000,000 (Ref. No. 1, p. 51591).

4.0 Surface Water Migration Pathway

4.1 Overland/Flood Migration Component

The following is an evaluation of the impact potential that certain site waste sources impose on the surface water environment in and downstream of Onondaga Lake. The drinking water threat was not evaluated due to the lack of surface water intakes along the lakes and rivers downstream of the site (Ref. No. 27).

4.1.1.1 Definition of Hazardous Substance Migration Path for Overland/Flood Migration Component

The following discussion identifies the overland flow probable points of entries (PPE's) for the nine hazardous waste sources included in the previous source section of this report (Ref. Doc. Record, pp. 8-29). The instream segment of the hazardous substance migration path for this site starts at the furthest upstream PPE and extends downstream 15 miles from the furthest downstream PPE (Ref. No. 11).

Source Number One: Willis Avenue Plant

Beneath the Willis Avenue facility, an underground pipe system collected an aqueous wastestream generated from plant operations (Ref. Nos. 3, p. 16; 8, p. 1). The wastestream was conveyed to the East Flume (which discharged directly to Onondaga Lake) and was designated in Allied Chemical's SPDES Permit as Outfall No. 001 (Ref. Nos. 3, p. 14; 5, pp. 92, 97; 6, pp. 5, 22 (Map 2); 8, p. 1). Prior to December 1977, the overland portion of the Flume was comprised of an open, unlined drainage ditch, approximately 1,000 feet in length, and a surface impoundment area near the southeastern Onondaga Lake shoreline (Ref. Nos. 6, p. 22 (Map 2); 8, p. 1). After December 1977, the discharge point was extended 900 feet into Onondaga Lake via a 5 foot diameter pipe (Ref. Nos. 6, p. 22 (Map 2); 8, p. 1; 11; 21, p. 5).

Source Number Two: Bridge Street Plant

Three aqueous wastestreams generated from Bridge Street plant operations were released to the West Flume, which discharged to the Geddes Brook (Ref. Nos. 3, pp. 14-15; 8, p. 2). The effluent discharge was designated in Allied Chemical's SPDES Permit as Outfall No. 002 (Ref. No. 6, pp. 5, 23 (Map 3)). The West Flume was an open, unlined ditch that extended approximately 5,000 feet in a northwest direction from the plant, until releasing into the Geddes Brook (Ref. No. 6, p. 23 (Map 3); 8, p. 2). The discharge point was located approximately 0.5 miles upstream of the confluence of Geddes Brook and Nine Mile Creek, a tributary of Onondaga Lake (Ref. Nos. 6, p. 23 (Map 3); 11).

Source Number Three: Semet Residue Ponds

The Semet Residue Ponds are bounded to the south and west by segments of Tributary 5A, a small stream that flows into Onondaga Lake (Ref. Nos. 11; 32, p. 6; 33, p. 23 (Fig. 11)). Numerous organic contaminants have been detected in surface water and sediment samples collected from the stream during historical sampling episodes (Ref. No. 33, Tables 14, 16, 17, 20, p. 23 (Fig. 11)). Because of potential seepage in the Tributary 5A, the nearest probable point of entry for contaminant migration is along the stream bank (Ref. No. 11).

Source Numbers Four and Five: Solvay Waste Beds 9, 10, & 11

The Waste Beds stormwater runoff and/or leachate seepage is routed to a dike/ditch drainage system that encapsulates the beds (Ref. No. 10, pp. 3-13, 4-9). The control system channels bed overflows to culverts/pipes locations which discharge into Nine Mile Creek (Ref. No. 10, pp. 4-9, 109-111). Furthermore, leachate was observed seeping into the creek at several locations during a site reconnaissance (Ref. No. 10, pp. 109-111 (Fig. 6)). The probable points of entry for overland flow migration into the Nine Mile Creek, are identified in Figure 4 (Ref. No. 11).

Source Numbers Six through Nine: Solvay Waste Beds 12, 13, 14, & 15

Waste Bed stormwater runoff and/or leachate seepage is collected by a ditch drainage system, which is fed from the overflows of dikes or from discharge boxes (Ref. Nos. 6, p. 23 (Map 3); 10, pp. 4-(11,12)). Presently, the control system channels bed overflows directly to retention basins, from which collected liquid is pumped to the Metropolitan Sewage Treatment Plant (Ref. No. 10, p. 4-12). Prior to the successful rerouting of the wastestream to the treatment plant in 1986 (approx.), bed overflows were discharged to the Geddes Brook (Ref. Nos. 3, p. 20; 6, p. 23 (Map 3); 8, p. 2). This discharge was designated in Allied Chemical's SPDES Permit as Outfall No. 003, and the discharge point to the brook was located to the immediate north of Outfall No. 002 (Ref. Nos. 5, pp. 93, 97; 6, pp. 5, 23; 11). The probable point of entry for the former bed overflow discharge is identified in Figure 4 (Ref. No. 11).

4.1.1.2 Target Distance Limit

The abovementioned overland migration paths for the sources listed either enter streams/tributaries of, or discharge directly to Onondaga Lake (Ref. No. 11). Onondaga Lake drains into the Seneca River via the lake outlet/barge canal located to the northwest (Ref. No. 11). The Seneca River is joined by the Onondaga River approximately seven miles downstream of the lake, forming the Oswego River (Ref. No. 11). The target distance limit for the site ends along the Oswego River, approximately 0.7 miles north of the designated northern land border, separating the Onondaga and Oswego counties of the State of New York (Ref. No. 11). The Oswego River continues to flow northward, eventually discharging into Lake Ontario (Ref. No. 9, p. IV-4).

Summary

Thus, the instream segment includes a portion of the Geddes Brook downstream of the PPE's for Outfalls Nos. 002 & 003 (from the Bridge Street Plant (Source No. 2) and from Solvay Waste Beds 12 through 15 (Source Nos. 6 through 9), respectively), and a portion of the Nine Mile Creek below the furthest upstream PPE for Solvay Waste Bed 11 (Source No. 5) (Ref. No. 11). The remainder of the instream segment includes all of Onondaga Lake, and segments of the Seneca and Oswego Rivers downstream of the lake to the target distance limit (15 miles)(Ref. No. 11).

4.1.3 Human Food Chain Threat

4.1.3.1 Likelihood of Release

In April of 1973, the U.S. EPA prepared a report titled, Mercury Source Investigation of Onondaga Lake, New York and Allied Chemical Corporation, Solvay New York, in support of the United States of America vs. Allied Chemical Corporation, which discussed mercury discharges to Onondaga Lake (Ref. No. 3, p. 7). In December 1972, the U.S. EPA collected sediment samples from forty-three locations within Onondaga Lake and two sediment samples from Nine Mile Creek (Ref. No. 3, pp. 35-36). The samples were analyzed only for mercury and the sampling locations are shown in Ref. No. 3, Figure 3 (Ref. No. 3, pp. 35-36).

In August of 1989, the NYSDEC prepared a report on the Mercury Sediments - Onondaga Lake (Ref. No. 9). The report was supported by an investigation which involved the collection of sediment samples from forty-three locations within the lake, and a total of eight sediment samples from tributaries of the lake and from the East Flume: a total of 225 sediment samples were collected (Ref. No. 9, p. 1-2). The NYSDEC also collected twelve surface water samples from Onondaga Lake, as well as from nine locations in the lake's tributaries and the East Flume (Ref. No. 9, p. 1-3). The samples were collected in 1986 and 1987; those collected in 1986 were laboratory-analyzed for mercury only, while those collected in 1987 were analyzed for all Target Compound List (formerly known as the Hazardous Substance List) organic and inorganic compounds, including cyanide (Ref. No. 9, pp. 1-(1,2)). The sampling methodology is fully described and sample locations are depicted in Ref. No. 9, Vol. 1, Section III (Ref. No. 9, Vol. 1, pp. III-1 through III-5).

The general conclusions of the abovementioned investigations indicated that Allied Chemical Corporation's operation of two chlor-alkali plants and their subsequent waste disposal of plant generated wastestreams, was a significant source for the mercury which contaminated the sediments in Onondaga Lake (Ref. Nos. 3, pp. 1-3, 7; 9, pp. IV-(6-9)). The two mercury sediment plumes identified in the Onondaga Lake bed, indicated the East Flume and West Flume (via Nine Mile Creek) as the primary points of mercury discharge (Ref. No. 3, p. 48; 9, p. IV-9). These studies provided the baseline information for establishing an observed release of mercury to the surface water of Onondaga Lake.

4.1.3.1.1 Observed Release

The following is a description of the release of mercury from the Allied Chemical and LCP chlor-alkali plants and Allied's Solvay Waste Bed areas. The attribution of the direct observation of three observed releases is documented in a letter from Allied Chemical to the NYSDOH dated July 21, 1970 (Ref. No. 4). It cited the quantiles/concentration levels of mercury in discharges originating from the Willis Avenue Plant, the Bridge Street Plant, and the Solvay Waste Beds (Source Nos. 1, 2, and 4 through 9) (Ref. Doc. Record, pp. 8-29). The release is further supported by the chemical analysis of water samples collected by the EPA in December 1972, that detected mercury in the wastestream discharges emanating from Allied Chemical plant locations (Ref. No. 3, p. 1). The quantity of mercury discharged between December 12-13, 1972 from the Bridge Street Plant, exceeded the one-half pound per day maximum level permitted by a U.S. Justice Department stipulation in 1970 (Ref. No. 3, pp. i, 1, 25).

Source Number One: Willis Avenue Plant

Direct Observation

- Basis for Direct Observation

Allied Chemical stated in a letter to the NYSDOH dated July 21, 1970, that the input of mercury to Onondaga Lake via east flume from the Willis Avenue (plant) operation amounted to about 0.5 pounds per day (Ref. No. 4, p. 2). Enclosed as an attachment to the letter was a graph/plot detailing the quantities of mercury released from the plant, between May 20, and July 16, 1970 (Ref. No. 4, p. 5). A review/summation of the attachment indicated that 44.54 pounds of mercury was released during the specified time period (Ref. No. 25).

Attribution: Allied Chemical operated the Willis Avenue chlor-alkali plant which utilized a mercury cell process to produce chlorine and hydroxides (Ref. No. 3, p. 14). A cooling water wastestream from the plant, known to contain mercury, was released to Onondaga Lake via the East Flume, which was designated in the facility's SPDES Permit as Outfall No. 001 (Ref. Nos. 3, Fig. 1, p. 14; 6, pp. 5, 22 (Map 3)). In a letter to the NYSDOH dated July 21, 1970, the average quantity of mercury released from the plant to Onondaga Lake, was estimated at 0.5 pounds per day (Ref. No. 4, p. 2).

(The attribution of mercury to the source is confirmed also by several chemical analyses: Sediment sample (S-46) collected during NYSDEC's 1987 investigation, indicated the presence of mercury in the East Flume (Ref. No. 9, pp. IV-(23, 33)). Extensive sediment samplings collected for EPA's 1973 and the NYSDEC's 1989 investigations, identified elevated mercury levels near the points of entry of Outfall No. 001 into Onondaga Lake. (Ref. Nos. 3, pp. 3, 48 (Figs. 6 through 14); 9, Vol. 1, p. IV-9 (Figs. IV-3 through IV-7)))

Hazardous Substances Released:

Mercury

=====

Observed Release Factor Value: 550

Source Number Two: Bridge Street Plant

Direct Observation

- Basis for Direct Observation

Allied Chemical stated in a letter to the NYSDOH dated July 21, 1970, that prior to May 9, 1970, the discharge of mercury to Geddes Brook from the Bridge Street (plant) operation amounted to about 22 pounds per day (Ref. No. 4, p. 1). Enclosed as an attachment to the letter was a graph/plot detailing the quantities of mercury released from the plant to the Geddes Brook, between May 8 and July 16, 1970 (Ref. No. 4, p. 8). A review/summation of the attachment indicated that 215.45 pounds of mercury was released during the specified time period (Ref. No. 26).

Attribution: Allied Chemical and LCP both operated the Bridge Street chlor-alkali plant which utilized a mercury cell process to produce chlorine and hydroxides (Ref. No. 3, p. 14). At least two mercury contaminated wastestreams originating from the Bridge Street Plant were discharged to the Geddes Brook via the West Flume, designated in the SPDES Permit for the facility as Outfall No. 002 (Ref. Nos. 3, Fig. 1, p. 14; 6, pp. 5, 23 (Map 3)). In a letter to the NYSDOH dated July 21, 1970, Allied Chemical stated that prior to May 9, 1970, the discharge of mercury to the Geddes Brook from the Bridge Street (plant) operation amounted to about 22 pounds per day (Ref. No. 4, p. 1).

(Attribution of the mercury to this source is also confirmed by several chemical analyses: A sediment sample (ON-44) collected from Nine Mile Creek during EPA's 1972 investigation, indicated the presence of mercury in the downstream sample at a concentration level approximately seven times greater than an upstream sample (ON-45)(Ref. No. 3, Fig. 3, p. 46). Sediment samples collected during NYSDEC's 1987 investigation from the Geddes Brook and Nine Mile Creek (stations S-48 and S-44), identified the highest concentration levels of mercury present when compared to other 1987 tributary sediment sample results (Ref. Nos. 9, pp. IV-(23,33); 11). Extensive sediment samplings collected for the EPA's 1973 and the NYSDEC's 1989 investigations, identified elevated mercury levels where Nine Mile Creek enters Onondaga Lake downstream of the Bridge Street Plant outfall. (Ref. Nos. 3, pp. 3, 48 (Figs. 6 through 14); 9, Vol. 1, p. IV-9 (Figs. IV-3 through IV-7)))

Hazardous Substances Released:

Mercury

=====

Observed Release Factor Value: 550

Source Numbers Four through Nine: Solvay Waste Beds 9 through 15

Direct Observation

- Basis for Direct Observation

Allied Chemical stated in a letter to the NYSDOH dated July 21, 1970, that Waste Bed overflow contained less than 1 part per billion (ppb) mercury, which was equivalent to a release of less than 0.05 pounds per day (Ref. No. 4, p. 3). Enclosed as an attachment to the letter, was a graph/plot detailing the concentration levels of mercury released in clear runoff, between May 9 and July 16, 1970 (Ref. No. 4, p. 6). Two surface water bodies, the Geddes Brook and the Nine Mile Creek, are the receiving waters for the historical and current discharges from Waste Beds 9 through 15 (Ref. Nos. 11; Doc. Record, pp. 15-29).

Attribution: In 1951, Allied Chemical began depositing mercury bearing boiler fly ash generated from chlor-alkali plant operations into the Solvay Waste Beds (Ref. No. 4, p. 3). Chemical analysis indicated that the fly ash carried approximately one pound of mercury per day to the Waste Beds, on those days when utilized for ash disposal by Allied Chemical (Ref. No. 4, p. 3). The quantity of mercury delivered to the beds potentially increased in 1970, when Allied Chemical began sending treated mercury cell wastestreams to Solvay Waste Beds 12 through 15 (Ref. Nos. 3, p. 14; 10, pp. 3-(14-18)). The deposition of mercury containing wastestreams along with contaminated boiler fly ash, resulted in a release of mercury equivalent to less than 0.05 pounds per day (Ref. No. 4, p. 3).

(The attribution of mercury to these sources can also be confirmed by several chemical analyses: Water samples collected during the EPA's 1973 Investigation, indicated a Waste Bed Overflow net discharge of 0.97 pounds of mercury per day (Ref. No. 3, p. 30 (Table 2)). During the NYSDEC's 1987 Phase II-Investigation, chemical analysis of sediment samples collected from the Geddes Brook and Nine Mile Creek, at stations (S-48 and S-44) located downstream of Outfall No. 003, identified the highest concentration levels of mercury present, when compared to other 1987 tributary sediment sample results (Ref. Nos. 6, p. 23 (Map 3); 9, pp. IV-(23,33)). Extensive sediment samplings collected for the EPA's 1973 and the NYSDEC's 1989 investigations, identified elevated mercury concentration levels downstream of the Solvay Waste Beds probable points of entry, where Nine Mile Creek enters Onondaga Lake. (Ref. Nos. 3, pp. 3, 48 (Figs. 6 through 14); 9, Vol. 1, p. IV-9 (Figs. IV-3 through IV-7)))

Hazardous Substances Released:

Mercury

=====

Observed Release Factor Value: 550

4.1.3.2 WASTE CHARACTERISTICS

4.1.3.2.1 Toxicity/Persistence/Bioaccumulation

<u>Hazardous Substance</u>	<u>Source Nos.</u>	<u>Toxicity Factor Value</u>	<u>Lake/River* Persistence Factor Value</u>	<u>Bioaccu- mulation Value</u>	<u>Toxicity/ Persistence/ Bioaccumulation Factor Value (Table 4-16)</u>	<u>Ref.</u>
Mercury	1, 2, 4, 5, 6, 7, 8, & 9	10,000	1.0	50,000	5×10^8	No. 1 No. 2 No. 4, pp. 1-3

* - The persistence factor for mercury is 1.0, for either lake or river surface water bodies (Ref. No. 2).

Toxicity X Persistence X Bioaccumulation = $10,000 \times 1 \times 50,000 = 5 \times 10^8$

=====

Toxicity/Persistence/Bioaccumulation Factor Value: 5×10^8

4.1.3.2.2 Hazardous Waste Quantity

<u>Source Number</u>	<u>Source Hazardous Waste Quantity Value (Section 2.4.2.1.5.)</u>	<u>Is source hazardous constituent quantity data complete? (yes/no)</u>
1	> 44.54	No
2	> 215.45	No
3	145,440	No
4	3,320,000	No
5	2,384,000	No
6	4,560,000	No
7	5,800,000	No
8	4,720,000	No
9	<u>1,796,000</u>	No

Sum of values: > 22,725,700

Assigned Hazardous Waste Quantity Factor Value: 1,000,000

4.1.3.2.3 Waste Characteristics Factor Category Value

(Toxicity X persistence factor value) X hazardous waste quantity factor value:
 $(10,000 \times 1) \times 1,000,000 = 1 \times 10^{10}$

(Capped at 1×10^8)

(Toxicity/persistence X hazardous waste quantity) X bioaccumulation potential factor value:
 $(1 \times 10^8) \times 50,000 = 5 \times 10^{12}$

(Capped at 1×10^{12})

The resulting Waste Characteristics factor of 1,000 is derived from the combined source hazardous waste quantity factor (1,000,000) and the hazardous substance mercury, noted in the observed release via direct observation to Onondaga Lake (Ref. Nos. 1, p. 51591-51592; 2; 4, pp. 1-3).

=====

Hazardous Waste Quantity Assigned Factor Value: 1,000,000
Waste Characteristics Factor Category Value: 1,000

4.1.3.3 Human Food Chain Threat-Targets

The following is an assessment of the threat that the releases of mercury to Onondaga Lake imposes on the aquatic Human Food Chain. The evaluation is primarily completed for a closed fishery, due to a hazardous substance (i.e. mercury) being released from the site, that was identified as the contaminant prompting the closure of the Onondaga Lake fishery in 1970 (Ref. Nos. 1, pp. 51620 - 51621; 23, pp. 1-2; 42, p. (4 of 47)). The zone of actual contamination is defined by the two probable points of entry for the Willis Avenue Plant (Source No. 1) wastestream discharge into Onondaga Lake (along the southeastern shoreline) (Ref. Nos. 1; 11). In addition to the lake fishery, the Seneca and Oswego rivers also support fisheries within the target distance limit for this site (Ref. No. 40). The zones of potential contamination for this site is the remaining area of Onondaga Lake and the portions of the Seneca & Oswego Rivers downstream ending at the target distance limit (15 miles)(Ref. Nos. 1; 11).

Identity of a fishery

Closed Fishery - Onondaga Lake

During the 1800's, Onondaga Lake was utilized as a commercial fishery (Ref. No. 9, p. IV-1). Although, the U.S. Fishing Commission reported a decline in the commercial fish harvest from the lake in 1885 (Ref. No. 9, p. IV-1), there is a lack of documentation in regards to the data for annual production of fish from the Onondaga Lake fishery. However, at least eighteen species of fish currently remain in Onondaga Lake, including: smallmouth bass, walleye, northern pike, bluegill, channel catfish, yellow perch, and carp (Ref. No. 9, p. IV-1).

In 1970, the NYSDEC in concert with the NYSDOH and New York State Department of Agriculture and Markets (NYSDAM) closed Onondaga Lake to all fishing, due to excessive mercury contamination (Ref. Nos. 23, pp. 1-2; 42, p. (4 of 47)). Mercury concentrations detected in fish tissue samples collected from Onondaga Lake in 1970, ranged from not detected to 8.20 parts per million (ppm) (Ref. No. 42, p. 20). In May 1973, the U.S. EPA sampled fish from Onondaga Lake, from Oneida Lake (located 13 miles to the northeast), and from Skaneateles Lake (located 15 miles to the south-southwest)(Ref. No. 3, pp. 60-62). Although mercury concentrations in the tissues of fish from Onondaga Lake had apparently declined since 1970, the levels were still significantly higher than in the tissue samples of fish collected from the other lakes (Ref. No. 3, pp. 62-66). An effort was subsequently initiated by the NYSDEC to gather information to document changes in mercury contamination levels of Onondaga Lake fish as industrial mercury discharges changed (Ref. No. 42, p. (4 of 47)). Since 1979, usually 50 fish (smallmouth bass -principal indicator species) have been collected from Onondaga Lake for a fish tissue analysis (Ref. Nos. 41, p. 109; 43, p. 1). As of 1987, the analysis of the tissue samples began noting higher mercury concentrations levels when compared to analysis of fish collected during previous years (Ref. No. 41, pp. 109-110). In 1989 and 1990, four through nine year-old smallmouth bass samples collected for fish tissue analysis, detected mercury concentration levels averaging 2.11 ppm and 1.68 ppm, respectively (Ref. Nos. 43; 44). The average mercury concentration levels are reminiscent of levels observed by the NYSDEC and EPA, in the early 1970's (Ref. Nos. 41, p. 109; 42, p. 20). The rate of accumulation (in fish species) is such that as the animal grows (ages) in the presence of contamination, mercury concentrations increase even though there is some depuration of mercury throughout the organism's life (Ref. No. 42, p. 7). The excess of mercury available from historical discharges, the subsequent contamination of lake sediments, and continued low level discharges, would probably account for the high mercury loadings (i.e. accumulation) in fish species present in Onondaga Lake (Ref. No. 42, p. 7).

The NYSDEC lifted the fishing ban for Onondaga Lake in 1986, and recreational fishing on a "catch and release" basis (i.e. no human consumption) is currently permitted (Ref. Nos. 18; 42, p. (4 of 47)). Warning signs were subsequently posted to remind the public of the health advisory not to eat fish caught from the lake (Ref. No. 42, p. (4 of 47)). Since that time, numerous anglers have returned to Onondaga Lake to fish for the variety of species present and fishing contests have been sponsored by the Onondaga County Parks Department (Ref. No. 18).

Fisheries - Seneca and Oswego Rivers

The Seneca and Oswego Rivers constitute a continuous fishery utilized by recreational anglers along the drainage route downstream of the site (Ref. Nos. 11; 18; 40). The consumption of fish taken from the rivers is limited to one meal per month by the NYSDEC (Ref. No. 18). In general the same types of human food chain species present in Onondaga Lake (i.e. smallmouth bass, walleye, northern pike, bluegill, channel catfish, yellow perch, and carp (Ref. No. 9, p. IV-1)) are also present in each of the rivers (Ref. No. 18). These fisheries are evaluated for potential contamination.

Summary

Onondaga Lake meets the HRS requirements as a target fishery since the lake was officially closed for human food chain consumption in 1970 due to the presence of high mercury levels in fish tissue and since there is an observed release of mercury directly to Onondaga Lake (Ref. Nos. 1, p. 51620; 23, pp. 1-2).

4.1.3.3.1 Food Chain Individual

Level II Concentrations

A observed release of mercury to Onondaga Lake, has been documented via direct observation (Ref. Doc. Record, p. 32). The aqueous wastestream released from the Willis Avenue Plant contained the hazardous substance mercury. In 1970, the NYSDEC in concert with the NYSDOH and NYSDAM closed Onondaga Lake to all fishing, due to excessive mercury contamination (Ref. Nos. 23; 42, p. (4 of 47)). Due to a hazardous substance (i.e. mercury - bioaccumulation factor greater than 500 (Ref. No. 2)) having been documented in a direct observation release to a fishery which was "closed" due to contamination by that substance, the evaluation of the fishery under HRS guidelines is permitted (Ref. No. 1, p. 51620). Therefore, the zone of actual (Level II) contamination is the probable points of entry along the southeastern shoreline of Onondaga Lake, from the wastestream discharge originating from the Willis Avenue Plant (Ref. Nos. 1, p. 51620; 11). The lake is presently fished on a permitted "catch and release" basis, with a minimum of eighteen human food chain species of fish available for taking (Ref. Nos. 9, IV-1; 18).

Hazardous Substance: Mercury
Bioaccumulation Potential: 50,000

<u>Identity of Fishery</u>	<u>Type of Surface Water Body</u>	<u>Reference</u>	<u>Dilution Weight</u>
Onondaga Lake	Lake	No. 1, pp. 51615-51621 No. 2 No. 4, p. 2	Not applicable; observed release

=====

Food Chain Individual Factor Value: 45

4.1.3.3.2 Population

4.1.3.3.2.2 Level II Concentrations

Identity of Fishery	Annual Production (pounds)	Reference	Human Food Chain Population Value
Onondaga Lake (Actually Contaminated Portion)	>0*	No. 1, p. 51621 No. 18	0.03

- * Quantitative data for the annual production of fish from the actually contaminated portion of the lake fishery, was not documented prior to closure. A production value of greater than zero pounds of fish per year, was assigned to indicate that this water body is supportive of and potentially could be used as a fishery. The greater than zero value is based on the past use of the fishery by anglers up to 1970, which prompted the health advisory "closure" due to excess mercury concentration levels in fish tissue (Ref. Nos. 23, pp. 1-2; 43, p. (4 of 47)), and the current utilization of the fishery on a permitted "catch and release" basis (Ref. Nos. 18; 42, p. (4 of 47)).

Sum of Human Food Chain Population Values: 0.03

(Ref. No. 1, p. 51621)

=====

Level II Concentrations Factor Value: 0.03

4.1.3.3.2.3 Potential Human Food Chain Contamination

Identity of Fishery	Type of Annual Production (pounds)	Surface Water Body	Average Annual Flow	Ref.	Population Value (P _i)	Dilution Weight (D _i)	P _i x D _i
Onondaga Lake	>0*	Lake	100 to 1,000 cubic feet per second(cfs)*	No. 1 No. 17, pp. 140, 142 143, 146; No. 24 No. 45, p. 38	0.03	0.01	0.0003

- * Quantitative data for the annual production of fish from the potentially contaminated portion of the lake fishery, was not documented. A production value of greater than zero pounds of fish per year, was assigned to indicate that this water body is supportive of and potentially could be used as a fishery. The greater than zero value is based on the past use of the fishery by anglers up to 1970, which prompted the health advisory "closure" due to excess mercury levels in fish tissue (Ref. Nos. 23, pp. 1-2; 43, p. (4 of 47)), and the current utilization of the fishery on a permitted "catch and release" basis (Ref. Nos. 18; 42, p. (4 of 47)). The average annual flow into Onondaga Lake, was determined from the approximate annual percent contribution of major sources of water to the lake (Ref. Nos. 17, pp. 140, 142-143, 146; 24; 45, p. 38). The summation of the flows (515.3 cfs) lies between the 100 to 1,000 cfs range, which determines the surface water body dilution weight value (0.01)(Ref. Nos. 1, p. 51613; 24).

Seneca River	>0*	Large stream to river	1,000 to 10,000 cfs*	No. 1 No. 17, pp. 137, 157; No. 24	0.03	0.001	0.00003
Oswego River	>0*	Large stream to river	1,000 to 10,000 cfs*	No. 1 No. 17, p. 157; No. 24	0.03	0.001	0.00003

- * Quantitative data for annual production of fish from these fisheries is unavailable for documentation. A value of greater than zero pounds per year is assigned to indicate that these water bodies are supportive of use as fisheries. The greater than zero value is based on the current utilization of the fisheries by recreational anglers and the allowance of one meal per month limit for fish caught from New York State surface water bodies (Ref. Nos. 18; 40). The average annual flow for the Seneca and Oswego Rivers, was determined from the average discharges recorded at USGS Gaging Stations upstream (3,385 cfs - Seneca River at Baldwinsville, NY) and downstream (6,643 cfs - Oswego River at Lock 7, Oswego, NY) of the instream segments of the two surface water bodies (Ref. No. 17, pp. 137, 157). Either flow value (3,385 cfs or 6,643 cfs) lies between the 1,000 to 10,000 cfs range, which determines the surface water bodies dilution weight factor (0.001)(Ref. Nos. 1, p. 51613; 24).

Sum of P_i x D_i: 0.00033
(Sum of P_i x D_i)/10: 0.000033
(Ref. No. 1, p. 51621)

=====

Potential Human Food Chain Contamination Factor Value: 0.000033

4.1.4 Environmental Threat

The following is an assessment of the impact potential that the release of mercury to Onondaga Lake imposes on the downstream surface water environment. The evaluation is completed for Onondaga Lake, which has been designated as an area for the protection or maintenance of aquatic life (Ref. Nos. 1, p. 51624; 13).

4.1.4.1 Likelihood of Release

The observed releases to surface water discussed in Sections 4.1.3.1 and 4.1.3.1.1 of the Doc. Record (Ref. Doc. Record pp. 31-34), also documents the observed release to surface water for the Environmental Threat. The zone of actual (Level II) contamination for the environmental threat are the probable points of entry along the southeastern lake shoreline for the wastestream discharge originating from the Willis Avenue Plant (Ref. No. 11). The remainder of the instream segments of the surface water pathway (within the 15-mile target distance limit) were evaluated for potential contamination (Ref. No. 11).

4.1.4.2 Waste Characteristics

4.1.4.2.1 Ecosystem Toxicity/Persistence/Bioaccumulation

Hazardous Substance	Source Nos.	Ecosystem Toxicity Factor Value	Lake/River* Persistence Factor Value	Ecosystem Toxicity/Persistence factor Factor Value (Table 4-20)	Reference
Mercury	1, 2, 4, 5, 6, 7, 8, & 9.	10,000	1.0	10,000	No. 2 No. 4, p. 2

* - The persistence factor for mercury is 1.0, for either lake or river surface water bodies (Ref. No. 2).

Hazardous Substance	Bioaccumulation Factor Value (Section 4.1.3.2.1.2)	Reference	Ecosystem Toxicity\ Persistence\ Bioaccumulation Factor Value (Table 4-21)
Mercury	50,000	No. 2 No. 4, p. 2	5×10^8

Ecosystem Toxicity X Persistence X Bioaccumulation Factor = $10,000 \times 1 \times 50,000 = 5 \times 10^8$

=====

Ecosystem Toxicity/Persistence/Bioaccumulation Factor Value: 5×10^8

4.1.4.2.2 Hazardous Waste Quantity

<u>Source Number</u>	<u>Source Hazardous Waste Quantity Value (Section 2.4.2.1.5.)</u>	<u>Is source hazardous constituent quantity data complete? (yes/no)</u>
1	> 44.54	No
2	> 215.45	No
3	145,440	No
4	3,320,000	No
5	2,384,000	No
6	4,560,000	No
7	5,800,000	No
8	4,720,000	No
9	<u>1,796,000</u>	No

Sum of values: > 22,275,700

Assigned Hazardous Waste Quantity Factor Value: 1,000,000

4.1.4.2.3 Waste Characteristics Factor Category Value

(Ecosystem toxicity/persistence factor value) X hazardous waste quantity factor value:
 $(10,000) \times 1,000,000 = 1 \times 10^{10}$

(Capped at 1×10^8)

(Ecosystem toxicity/persistence X hazardous waste quantity) X bioaccumulation potential factor value:
 $(1 \times 10^8) \times 50,000 = 5 \times 10^{12}$

(Capped at 1×10^{12})

The resulting Waste Characteristics factor of 1,000 is derived from the combined source hazardous waste factor quantity (1,000,000) and the hazardous substance mercury noted in a direct observation release, for Onondaga Lake (Ref. No. 1, pp. 51591-51592).

=====

Hazardous Waste Quantity Factor Value: 1,000,000
Waste Characteristics Factor Category Value: 1,000

4.1.4.3 ENVIRONMENTAL THREAT - TARGETS

4.1.4.3.1 Sensitive Environments

4.1.4.3.1.2 Level II Concentrations

Sensitive Environments

<u>Sensitive Environment</u>	<u>Distance from the Probable Point of Entry to Nearest Location of a Sensitive Environment</u>	<u>Reference</u>	<u>Sensitive Environment Value(s)</u>
Onondaga Lake - NYS Water Quality Classification C - State designated area for protection or maintenance of aquatic life.	0 miles*	No. 1, p. 51624 No. 9, pp. 1-2,3,6 No. 13	5

* - The wastestream discharge (containing mercury) from the Willis Avenue Plant, established the zone of actual (Level II) contamination at the two probable points of entry into Onondaga Lake (Ref. No. 11). The probable point of entry for Outfall No. 001 was originally located along the southern lake shoreline, but was extended 900 feet further offshore in about 1978 (Ref. Nos. 8, p. 1; 21, p. 5). The surface water quality classification for Onondaga Lake in this area is Class C (Ref. Nos. 9, pp. 1-2,3,6; 13).

=====

Level II Concentrations Factor Value: 5

4.1.4.3.1.3 Potential Contamination

Sensitive Environments

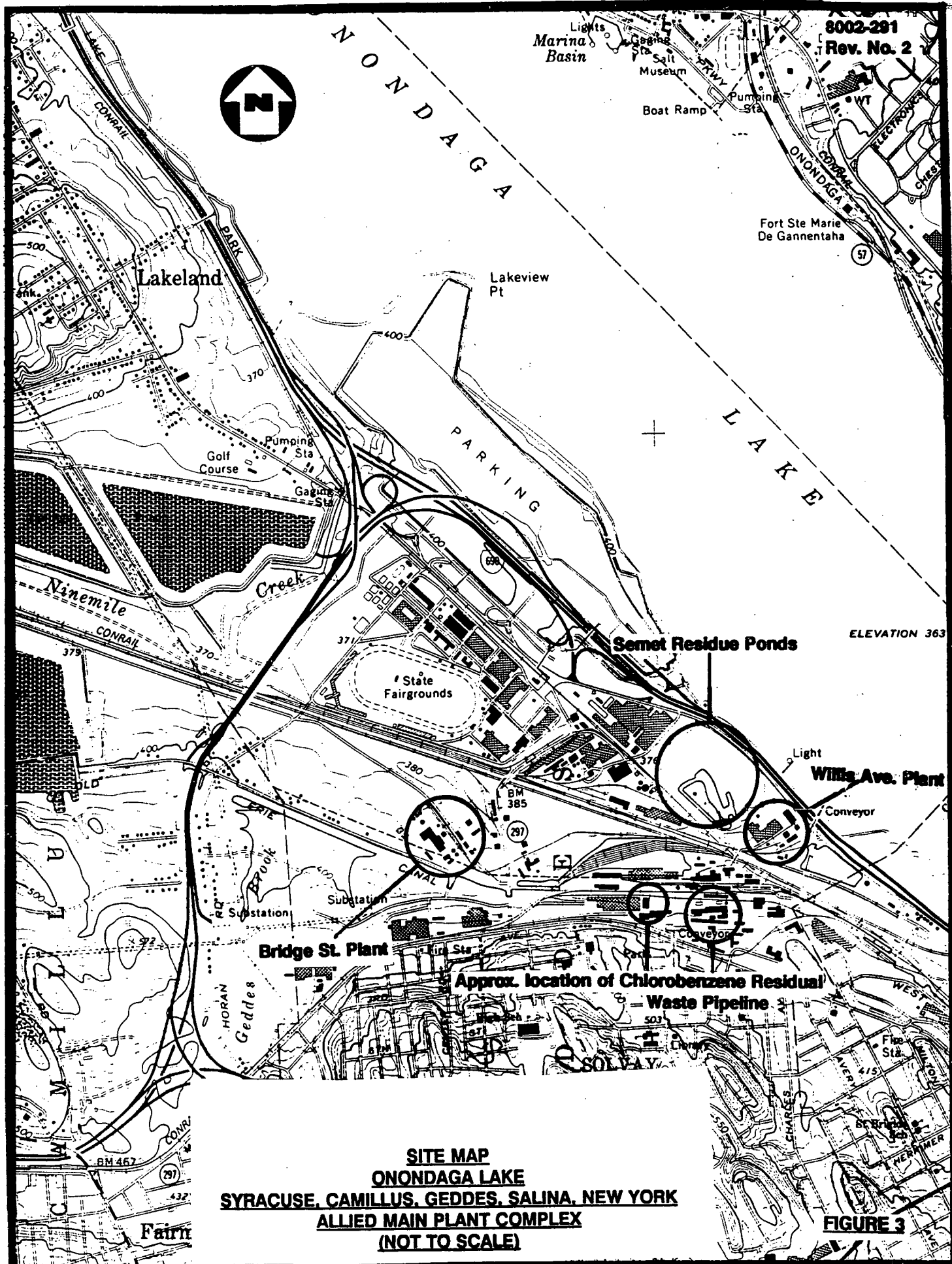
Wetlands - Not Evaluated

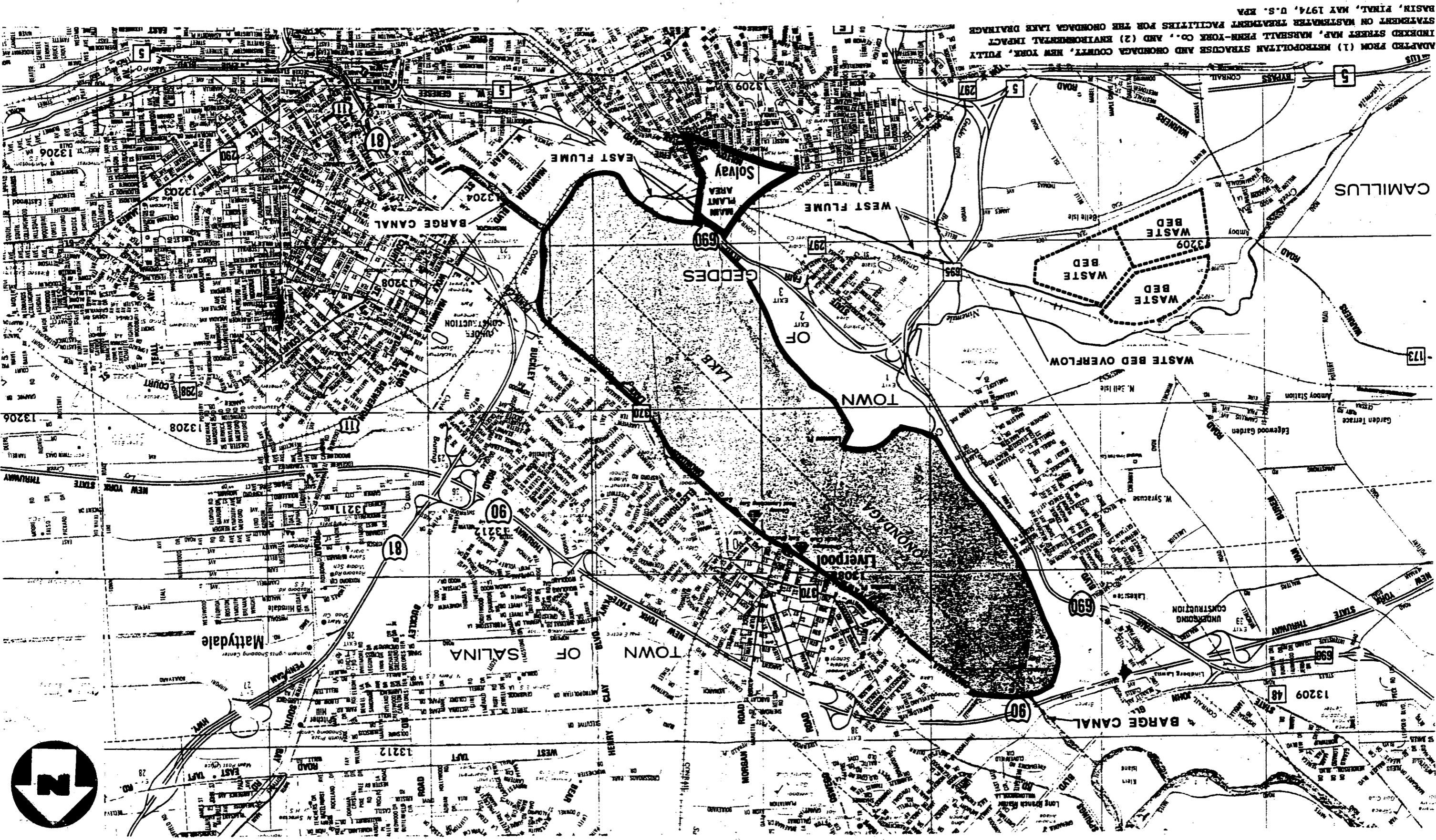
Although there are approximately five miles of palustrine designated wetlands along the Seneca and Oswego Rivers (Ref. No. 12 (Fig. 5)), there is insufficient documentation that contamination could come in contact with these wetland areas via the surface water pathway.

=====

Potential Contamination Factor Value: 0

SECTION IV: FIGURES

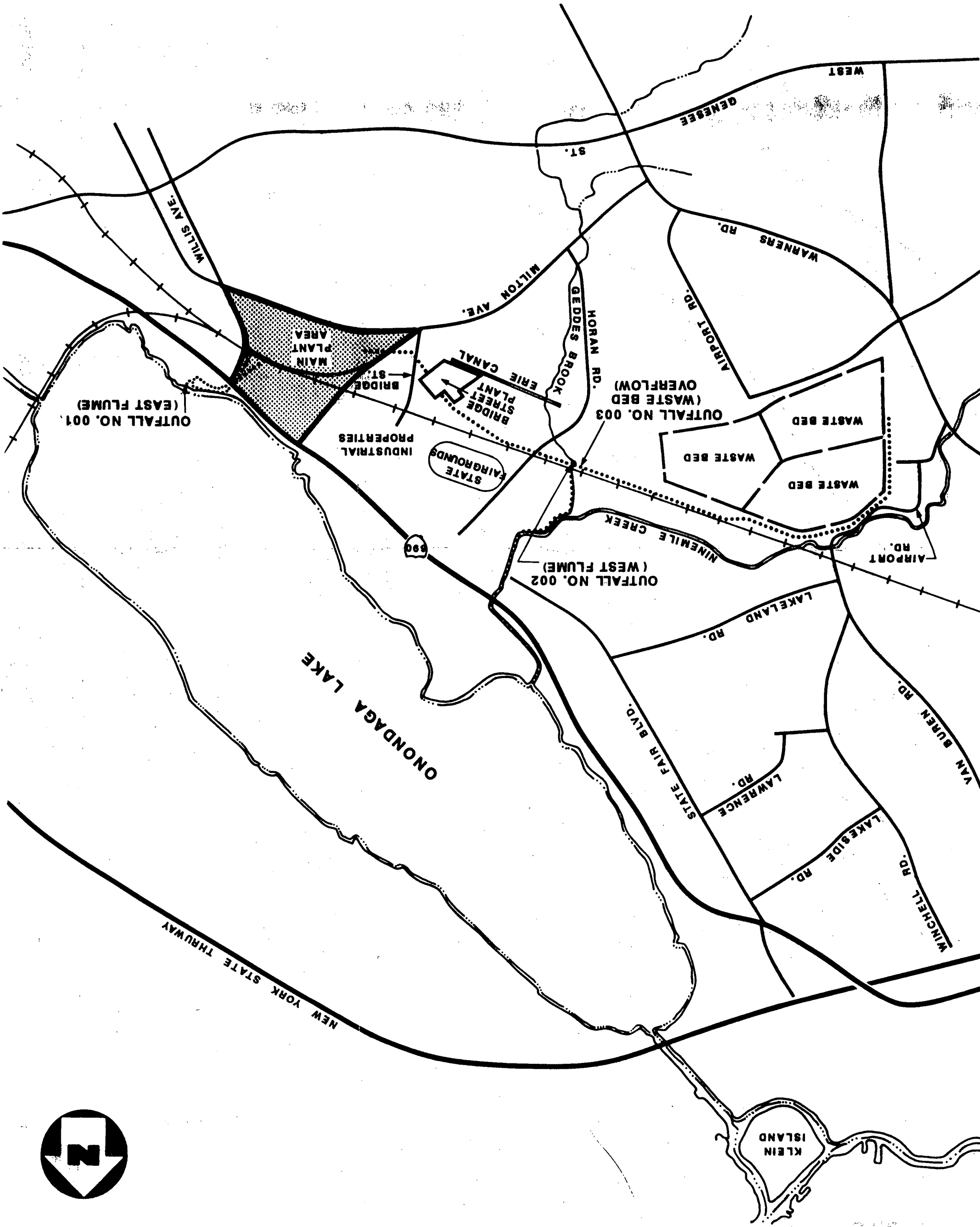




ADAPTED FROM (1) METROPOLITAN SYRACUSE AND ONONDAGA COUNTY, NEW YORK, FULLY INDEXED STREET MAP, MARSHALL PENN-YORK CO., AND (2) ENVIRONMENTAL IMPACT STATEMENT ON WASTEWATER TREATMENT FACILITIES FOR THE ONONDAGA LAKE DRAINAGE BASIN, FINAL, MAY 1974, U.S. EPA

SITE LOCATION MAP
ONONDAGA LAKE
SYRACUSE, CAMILLUS, GEDDES, SALINA, NEW YORK
(NOT TO SCALE)

FIGURE 1



SITE MAP
ONONDAGA LAKE
SYRACUSE, CAMILLUS, GEDES, SALINA, NEW YORK
(NOT TO SCALE)